



ARAB AND NEAR EAST PLANT PROTECTION NEWSLETTER



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Arab Society for Plant Protection Congresses: A Regional Platform for Professional communication and a Window to the World

Since its official establishment in 1981, The Arab Society for Plant Protection (ASPP) focused its efforts on two major objectives: the organization of a professional congress for plant protection scientists in the Arab world on regular basis and the publishing of a scientific refereed journal that reflects the interests and outputs of research scientists in the Arab region. During the first meeting of the ASPP Executive Committee formed by the Society founders, the late Dr. Walid Abu Gharbieh, God bless his soul, who was then ASPP Vice President and professor of nematology at the University of Jordan, offered to host the first Arab Congress of Plant Protection to be held at the Faculty of Agriculture, University of Jordan, Amman, Jordan in 1982. Since this was the first meeting, the ASPP EC was a bit afraid that this congress will not meet their expectation. However, with the excitement and determination of Dr. Abu Gharbieh and his team made the dream a reality and the congress success was beyond expectations. Around 275 scientists from different countries in the Arab region and 25 scientists from the rest of the world participated in this event. It can be noted here that one of the participants from Germany, Professor Jurgen Kranz a well-known expert in disease epidemiology, and after returning home he wrote a short article in a local newspaper about his reflections on the congress he just attended. He clearly stated that he was impressed with the quality of presentations and high standard of organization. One of the most important decisions made by the ASPP General Assembly held during the first congress is to establish a scientific refereed journal for plant protection in the Arabic language starting in 1983, and Dr. Abdelrahman Saghir, one of ASPP founders, was appointed as the first Editor-in-Chief for the journal. The first issue of the Arab Journal of Plant Protection was issued in June 1983, and the journal continued to be published regularly since then. The journal at present has a very good professional reputation, is an open access journal indexed by SCOPUS and received in 2018 an Arab Impact Factor of 3.0.

Following the Amman congress, ASPP congresses followed regularly once every three years to Damascus, El-Ain, Cairo, Fes, Beirut, Amman for the 2nd time, Baida, Damascus for the 2nd time, Beirut for the 2nd time, Amman for the 3rd time, and Hurgghada, and soon will be held in Hammamet, Tunisia in 2020. High professional standard and level of organization gave ACPP high credibility within the scientific community and is now considered one of the most important scientific events in the Arab region, and it attracts 400-600 participants in each meeting in spite of all the difficulties the Arab region is facing over the past few decades, and unfortunately still is. These congresses created a platform for building new professional linkages and strengthen the already established ones. The fact that each of these congresses attract a significant number of scientists (30-50) from the rest of the world facilitated creating linkages (formal or informal) between plant protection scientists in the Arab region and those from countries outside the region that led to joint collaborative research projects and built permanent professional linkages. Thus, ASPP congresses became for the Arab plant protection scientists their window to the world. Meanwhile, ASPP became an active member within international scientific bodies in plant protection such as the Mediterranean Phytopathological Union (MPU), the International Association of Plant Protection Sciences (IAPPS), the International Society of Plant Pathology (ISPP).

It is our hope that the coming congress in Tunis in 2020 is another big success for plant protection scientists, and in this occasion we invite all interested colleagues to visit the congress website (www.acpp-aspp.com) for more information.

Khaled Makkouk

ASPP EC member/ Editor-in-Chief, Arab Journal of Plant Protection

INVASIVE AND NEW PESTS

EGYPT

Redescription of the Feather Mite *Gabucinia delibata* (Robin, 1877) (Astigmata: Gabuciniidae), newly Recorded from the Hooded Crow, *Corvus cornix* (Linnaeus, 1758) (Passeriformes: Corvidae) in Egypt. Faunistic information about feather mites in Egypt is scarce, as well as in the Middle East region. *Gabucinia delibata* (Robin, 1877) (Astigmata: Pterolichoidea: Gabuciniidae) is recorded for the first time in Egypt from the Hooded crow, *Corvus cornix* (Linnaeus, 1758) (Passeriformes: Corvidae). Adult males and females of *G. delibata* are redescribed and illustrated. Examined specimens were compared with previous description and anomalous features were discussed. The new mite record reported here provides descriptive information for future taxonomic research of feather mites in Egypt. Hopefully, the present work would encourage more comprehensive surveys in the Middle East region since large number of undiscovered species expected. [Mohamed W. Negm and Hassan M. Hassan (Egypt), *The Journal of Basic and Applied Zoology*, in press, 2019].

Description of *Heterodispus longisetae* n. sp. (Acari: Heterostigmatina: Scutacaridae) from Soil of Citrus Orchards in Assiut, Egypt. A survey of mite fauna inhabiting citrus orchards in Abutig, Assiut Governorate, yielded the discovery of a new species, *Heterodispus longisetae* n. sp. (Acari: Scutacaridae). The new species is morphologically described and illustrated. [Sayed A. Eraky, Mohamed W. Negm, Taha Y. Helal, Saber F.M. Moussa (Egypt), *Assiut Journal of Agricultural Sciences*, 2019].

IRAQ

New Record of Species *Stephanitis hoberlandti* Hoberlandt 2000 in Baghdad Province. A new records of lace bugs species *Stephanitis hoberlandti* (family: Tingidae) belongs to (order: Hemiptera and sub order: Heteroptera) has been collected two hundred insects (200) adult (male and female) and one hundred twenty (120) nymph have been collected from leaves of fruit (*Malus domestica* and *pyrus communis*) from different location in Baghdad province on 10/ 5/ 2017, 10/ 9/ 2017, 15/ 2/ 2017 (Abu- Gharib, Al- mahmodia and Al- Yosifia). Insects were indentified by using taxonomic keys and morphological characters. A camera (Lucida) has been used to draw bodies' parts and to take pictures. [Haneen Sabah Hussein, Awatif Abdul- Fatah Hamodi, (Iraq), *Department of Plant Protection, College of Agriculture, Baghdad University, Iraq, Plant Archive V19, No. 1, 2019*].

New Record for Two Species of Genus *Autographa* Hübner 1821 (Lepidoptera: Noctuidae: Plusiinae) in Baghdad. New record of two species of genus *Autographa* Hübner 1821 belongs to Subfamily Plusiinae and to the Family Noctuidae and to the suborder of Heterocera (moths) of Order Lepidoptera, these species as *Autographa pseudogamma*, and *Autographa rubida*, which collected 6 six insects from Baghdad / Ameriya and the other collected 5 five insects from Baghdad / Ameria and Diyala Khan Bani Saad, this species are a new record in Iraq during the study at 2017 – 2018. The insects Indented by used taxonomic keys depended on morphological characters and male genitalia. A digita camera (Lucida) was used to draw bodies' parts and to take pictures. [Hussein Kattan Mohammed and Awatif Abdul Fatah Hamodi (Iraq), *Department of Plant Protection, College of Agricultur, University of Baghdad, Iraq. Plant Archives, Vol. 19, January, 2019*].

First Record of *Fusarium poae*, Wheat Root Rot Fungus in the North of Iraq. The Results of field survey conducted in Ninevah and Erbil governorates to assess the distribution of root rot disease in wheat have shown variability in infection levels. In Ninevah; the highest infestation of 27.5% was reported from Bashika, and lowest of 16.9% from Hamdaniyeh, and in Erbil; the highest infestation of 25.8% was reported in Grdy Mawan and lowest of 21.5% was in Khalwan. Isolates from root rot infected wheat plants showed the appearance of *Bipolaris sorokiniana* (Sacc.) Shomaker, *Fusarium graminearum* (Schwabe), *F. culmorum* (Wm. G. Smith) Sacc and and *F. poae* (Schwabe) were first found and recorded on wheat in Iraq. The fungus *B. sorokiniana* isolation rate was highest (54.1%) in Tallafar and lowest (37.1%) in *Qapakian*, followed by the fungus *F.culmorum* (22.1-25.4%). Identification of isolated fungi were confirmed by conducting polymerase chain reaction (PCR) molecular test using 2 specific

primers FP82F and FP82R. The expected PCR product (220 bp) obtained from a specific molecular marker (FP82), confirmed that they belong to fungus *F. Poae*. However, this is the first molecular study which indicated clearly the presence of *F. Poae* in Iraq. [Ali Kareem Al-Taae, Zardasht Abdulwahhab Taha (Iraq), Rafidain Journal of Science (Botany, 3rd Scientific Conference of Biology), 27(5): 162-168, 2018].

First Record of Rice Water Weevil, *Picia mesoptomica* Tournier, 1889 (Curculionidae: Coleoptera) on Rice in Middle of Iraq. Rice water weevil, *Lissorhophtrus oryzophilus* Kuschel is considered the key pest of rice in different parts of the World. It feeds mainly on rice and aquatic and semi-aquatic plants belong to families gramineae (Poaceae) and Cyperaceae. According to previous studies, it causes a loss in rice yield ranging between 10 and 33% and can increase up to 70% in severe injury. The genus *Picia* has 7 species including *Picia mesoptomica* Pic. which is considered as an important crop especially in central and south of Iraq. There are no previous studies on rice pests in Iraq. Laboratory and field studies were conducted during the rice-growing season 2014/2015 at Al-Najf and Al-Qadissiya Provinces in the south of Iraq and included the identification, biology, alternative host plants, in addition to the evaluation of some elements of cultural control methods. The rice water weevil was identified as *Picia mesoptomica* Pic. (Curculionidae: Coleoptera) and considered to be a new record on rice in Iraq. The life cycle was studied at 30±3 °C, 70±5 % RH and 12:12 hours (L: D) photoperiod. Females lay around 174-237 eggs in the sheath of the leaf beneath the water surface. Mean developmental periods were, 7, 37, 9 and 58 days for eggs, larvae and pupa and from egg to adults, respectively for the rice water weevil *P. mesoptomica* Pic. The sex ratio were: 3.67: 1.45 (female: male) in favor of females and there was two generation per year for this pest on rice in Iraq. [Mery K. Mubasher and Hameed H. Al-Karboli (Iraq), Department of Plant Protection, College of Agriculture, University of Al -Muthana, 2019].

***Alternaria alternata* causes Leaf Blight of Rosy Periwinkle (*Catharanthus roseus*) in Iraq.** Severe symptoms of leaf blight were observed on nursery-grown rosy periwinkles (*Catharanthus roseus*) in Kerbala province, Iraq. The causal agent was isolated and identified as the fungus *Alternaria alternata*. This identification was based on the pathogen's morphological, molecular and pathogenic characteristics. To the best of the author's knowledge, leaf blight of rosy periwinkle caused by *A. alternata* is the first record of this disease in Iraq. [Adnan A. Lahuf (Iraq), Journal of Australasian Plant Disease Notes, 14:4, 2019]. <https://doi.org/10.1007/s13314-019-0334-9>

SYRIA

Explanation of the Recording of the Red Gum Lerp Psyllids in Syria. The first record of the red gum lerp psyllids in Syria was recorded in the Arab and Near East Plant Protection Newsletter No. 66 in 2015, as well as a detailed article on it in Tishreen University Journal for Research and Scientific Studies, 37 (6) for the year 2015 (21-41), entitled: Biology of Red gum lerp Psyllid *Glycaspis brimblecombei* Moore, 1964 (Homoptera: Aphalaridae) in the province of Lattakia, Syria as reported in the Mediterranean Plant Protection Organization EPPO Reporting Service no. 01 - 2016 Num. article: 2016/004 based on what was published in the newsletter mentioned above, and that the scientific article which was published in the Journal of the Arab Plant Protection in 2019 entitled: First record of the red gum lerp psyllid, *Glycaspis brimblecombei* Moore, 1964 (Homoptera: Psyllidae), on *Eucalyptus* spp. in Syria. Arab Journal of Plant Protection, 37 (1): 77-81, is in fact not the first record of this insect in Syria. [Nabil Abo Kaf (Syria), Department of Plant Protection, Faculty of Agricultural Engineering -Tishreen University, Lattakia – Syria, 2019]

First Report of the Bark Beetle *Phloeosinus armatus* on the Mediterranean Cypress *Cupressus sempervirens* in Syria. The bark beetle *Phloeosinus armatus* is one of the most important pests that causes significant damage to the Mediterranean cypress *Cupressus sempervirens*. Adults of this insect were collected from the Mediterranean cypress trees from several sites located in the Eastern Ghouta near Damascus, south of Syria, in autumn 2014. The insect was morphologically described, and measurements were taken from different body parts. The adults were characterized by their small size which ranged between 3.60 to 3.88 mm for males and 3.88 to 4.08 mm for females, with a shiny chestnut color covered with short hair. The antennae are clavate (capitate) and consist of 5 flagella and their length ranged between 1.04 to 1.12 mm for males and 1.01 to 1.16 mm for females. The beetles are characterized by chewing mouthparts. The legs are similar in shape. The tarsus consists of 4 segments. The tip segment is prolonged and ends with a couple of claws. The leg length ranged between 1.26 to 1.49 mm for the males

and 1.80 to 1.96 mm for females. This investigation, aimed mainly to describe *P. armatus*, and is the first report for this beetle in Syria. [Aljouri, E., Gharib, M., Almanoufi, A., Daher-Hjai, N., and AlIssa-AlKharaba, H. (Syria), *Tunisian Journal of Plant Protection* 13 (2): 263-268 ,2018].

New Mite Records (Acari: Mesostigmata, Trombidiformes) from Soil and Vegetation of some Syrian Citrus Agrosystems. This study gives the result of collections of mite fauna inhabiting soil, litter and plant species surrounding citrus orchards at three localities in Latakia governorate. Mites collected were identified and only new-recorded species are presented. During this study, 21 species belonging to 12 families (4 Mesostigmata and 8 Trombidiformes) are reported as new to the Syrian fauna. Five species were phytophagous mites (belong to Tenuipalpidae and Tetranychidae), while the others are considered as generalist predators or feed on microorganisms in their habitats. The results could be of importance for integrated pest management applied in Syrian citrus orchards. [Ziad Barbar (Syria), *Acarologia*, 58(4): 919-927, 2018.]

SAUDIA ARABIA

New Records of Feather Mites (Astigmata: Analgidae, Avenzoariidae, Proctophyllodidae) from the Blackcap, Saunders's tern and Osprey in Saudi Arabia. Four feather mites, *Analges spiniger* Giebel, 1871 (Analgidae), *Pandionacarus fuscus* (Nitzsch, 1818), *Zachvatkinia issykkulica* Chirov, 1978 (Avenzoariidae), and *Proctophyllodes sylviae* Gaud, 1957 (Proctophyllodidae), are reported for the first time in Saudi Arabia. Males and females of *A. spiniger* and *Pr. sylviae* were collected from the blackcap, *Sylvia atricapilla dammholzi* Stresemann, 1928 (Passeriformes), while *Z. issykkulica* and *P. fuscus* specimens were collected from the Saunders's tern, *Sternula saundersi* (Hume, 1877) (Charadriiformes) and the osprey, *Pandion haliaetus* (Linnaeus, 1758) (Accipitriformes), respectively. The families Analgidae and Proctophyllodidae, as well as the genus *Pandionacarus*, are new to this country. [Mohamed W. Negm, (Egypt), Fabio A. Hernandez, Mohamed G. E.-D. Nasser, Azzam M. Al Ahmed and Mohammed Shobrak, *International Journal of Acarology*, 2019]. DOI: [10.1080/01647954.2018.1561752](https://doi.org/10.1080/01647954.2018.1561752)

MOROCCO

First Report on the Occurrence of Grapevine Rupestris Stem Pitting-associated Virus in Moroccan grapevines. Grapevine rupestris stem pitting-associated virus (GRSPaV), a member of the genus Foveavirus in the family Betaflexiviridae, has a high genetic variability (Meng and Rowhani 2017); some strains are putatively associated with Rupestris stem-pitting disease, a component of the Rugose Wood complex of the grapevine. To assess the viral status of grapevine in Meknès region (the central part of Morocco), a total of 35 samples of cv. 'Cinsaut' were randomly collected in 2013 from the same vineyard. After total RNA extraction and cDNA synthesis, the presence of GRSPaV was checked by PCR using two sets of primers: RSP-52 (5'-TGAAGGCTTTAGGG GTTAG-3') and RSP-53 (5' CTTAACCCAGCCTTGAAAT- 3') that amplify the complete (905 bp) coat protein (CP) gene (Rowhani et al. 2000) and RSPaV13 (5-GATG AGGTCCAGTTGTTTCC-3') and RSPaV14 (5'-ATCC AAAGGACCTTTTGACC-3') that amplify a partial fragment (338 bp) within the helicase domain of ORF1 (Meng et al. 1999). Five samples reacted positively and showed amplicons of the expected sizes using both sets of primers. PCR products of the CP gene originated from the positive samples were purified and sequenced in both directions. The obtained sequences were identical; one of those sequences was deposited in GenBank (accession number MH156797). Nucleotide blast analysis of the Moroccan isolate showed 98% sequence identity with a French one within group I (SGM5-1; KX035004). To our knowledge, this is the first report of GRSPaV infecting grapevine in Morocco. Even if the number of the tested samples was relatively low, this result can help to understand the incidence of GRSPaV that seems to be unexpectedly low if compared to other reports (Meng and Rowhani 2017). Due to the selfrooted condition of the old vineyard visited in the Meknes area, this low GRSPaV infection rate (five positive samples out of 35 tested) is conceivable, as this virus essentially spreads through vegetative propagation of infected sources or grafting with infected rootstocks. Moreover, (i) the strict homology with a French isolate could reflect the most likely common origin of this propagation material certainly before the introduction of grafting on American rootstocks, (ii) GRSPaV has no known vector, thus the local spread of mixed infections could have been happened only through overgrafting with budwood bearing different strains; finally (iii) the identification of a single dominant molecular variants is likely due to the direct sequencing of PCR products, that may conceal minor variants present in lower concentration. Further and wider investigations will disclose the clear picture of the GRSPaV relevance in

Moroccan grape germplasm.[Mohamed Afechtal, Majid Mounir, Angelantonio Minafra, Pasquale Saldarelli and Raied Abou Kubaa (Morocco), Journal of Plant Pathology, 2018]. <https://doi.org/10.1007/s42161-018-0167-y>

UNITED ARAB EMIRATES

Molecular Identification of Fungal Pathogens Associated with Date Palm Root Diseases in the United Arab Emirates. Date palm is the most widely cultivated crop in the United Arab Emirates (UAE). This study identified the main fungal root pathogens of date palms in the UAE. Isolations were established from 84 root samples and the recovered fungal isolates were identified using morphology and sequences of the internal transcribed spacer region of the ribosomal RNA gene (ITS rRNA) or the translation elongation factor gene (TEF1). The study revealed association of 10 fungal species with date palm roots, with *Fusarium solani* (82%), *Lasiodiplodia hormozganensis* (57%), *Ceratocystis radicola* (7%) and *L. theobromae* (7%) being the most common. A pathogenicity test revealed that *C. radicola* is the most aggressive, followed by *L. hormozganensis* and *L. theobromae*. These fungi resulted in rotting and development of necrosis on the roots as well as the development of wilt symptoms on 12-month old date palm seedlings. To our knowledge, this study is the first report of association of *C. radicola* with date palm root diseases in the UAE. It also appears to report for the first time three new fungal species in the UAE, *Fusarium keratoplasticum*, *Cochliobolus hawaiiensis* and *Cephaliophora tropica*. [Mohammed S. Al-Hammadi, Rashid Al-Shariqi (United Arab Emirates), Sajeewa S. N. Maharachchikumbura, Abdullah M. Al-Sadi (Oman), Journal of Plant Pathology, Volume 101, Issue 1, pp 141–147, 2019].

TUNISIA

First Diet Survey in Niger River Valley and Acute Risk Assessment for Consumers exposed to Pesticide Residues in Vegetables. To control pests and crops diseases, small scale farmers in the Niger River valley use a wide range of plant protection products which could induce harmful impacts on human health and environment. Dietary exposure to plant protection products residues was assessed in Niger River valley using the 24-hour recall method. Portion sizes were estimated using a collection of pictures previously prepared according to the local usual diet. A total of 45 samples of eight types of vegetables, representative of the most consumed in the study area (Niamey) during the dry hot and the dry cold season were collected. Samples were analyzed using a multi-residue method (QuEChERS) by gas chromatography-mass spectrometry (GC-MS/MS) and liquid chromatography-mass spectrometry (LC-MS/MS) that can detect more than 540 active ingredients. Residues of insecticides were detected in 64.4% of the analyzed samples. Among them, 26.7% contained residues above maximum residue limits (MRLs), 35.5% below MRLs, 2.3% of samples had residue equal to the MRLs. Chili peppers, tomatoes, moringas, head cabbages, sorrel leaves and peppers were the most contaminated vegetables. Their residue levels were, respectively, 4.6 mg/kg of chlorpyrifos-ethyl, 0.29 mg/kg of dichlorvos, 1.8 mg/kg of cypermethrin, 1 mg/kg of chlorpyrifos-ethyl, 0.46 mg/kg of acetamiprid and 0.41 mg/kg of dichlorvos. To evaluate the intake and characterize the risk level for adults and children, the EFSA PRIMO model spreadsheet (Pesticide Residue Intake Model) was used. The exposure results based on consumptions at the 97.5th percentiles show that the highest predicted exposure values for a short-term intake (PSTI) was obtained in the case of consumption of head cabbages (532% of ARfD) for adults and tomatoes (1052% of ARfD) for children. Whatever the product, the risk of exposure was higher for children than for adults for all detected residues. [Illyassou, K.M., Adamou, R., and Schiffers, B. (Tunisia), Tunisian Journal of Plant Protection 13 (2): 243-262, 2018].

First Report of *Carcina quercana* on the Strawberry Tree (*Arbutus unedo*) in Northwestern Tunisia. *Carcina quercana* is a polyphagous insect. In April 2018, larvae of *C. quercana* were observed for the first time in Majen Essef (north western Tunisia) on the strawberry tree (*Arbutus unedo*). To estimate the percentage of tree infestation, the number of infested trees among 40 trees found in an area of one hectare was counted. Branches of about 30 cm in length were cut and examined in the laboratory to determine the percentage of the infested leaves. On infested leaves, shelters were counted and the number of larvae by shelter was determined. The percentage of infested tree was 20% and that of infested leaves was 7.16%. In each leaf, we found between 1 and 3 shelters, in which only one larva host it. Larvae of *C. quercana* build their shelters of about 1.91 cm in length and 0.73 cm in width by means

of silk.[Ezzine, O., Ben Yahia, K., Dhahri, S., Ammari, Y., and Ben Jamâa, M.L. (Tunisia), *Tunisian Journal of Plant Protection* 13 (2): 269-274, 2018].

First Report of Three Tortricidae Species on *Quercus suber* Forest in Northwestern. The Tunisian fauna of Tortricidae has been poorly investigated despite the great economic importance of this family. Sampling of Tortricidae insects was carried out in spring and summer 2010 in two cork oak (*Quercus suber*) forests in northwestern Tunisia. Three species are reported for the first time: *Archips xylosteana*, *Pammene splendidulana*, *Pammene giganteana*. Their identification was achieved using DNA barcodes. [Mannai, Y., Ezzine, O., Hausmann, A., and Ben Jamâa, M.L.(Tunisian), *Tunisian Journal of Plant Protection* 13 (2): 275-280, 2018].

RESEARCH HIGHLIGHTS

ALGERIA

Occurrence of Fusarium Head Blight and Fusarium Crown Rot in Algerian wheat: Identification of Associated species and Assessment of Aggressiveness. Fusarium head blight and Fusarium crown rot are two important fungal diseases of wheat worldwide. This research was carried out to study the most important species associated to these two diseases in Algeria. Symptomatic crowns and heads were collected from different wheat growing regions in Algeria. Morphological and molecular identifications showed the occurrence of six fungal species isolated from crowns for the 2 years: *Fusarium culmorum* (68%), *F.pseudograminearum* (10%), *F.verticillioides* (3%), *F.avenaceum* (2%), *Microdochium majus* (13%) and *M. nivale* (4%). Two species only, *F. culmorum* (94.1%) and *F. pseudograminearum* (5.9%), were obtained from the heads. Among the *Fusarium* spp., 30 isolates were chosen for the pathogenicity tests: *F. culmorum* isolated from symptomatic crowns (n =10), *F. culmorum* isolated from blighted heads (n = 10) and *F. pseudograminearum* (n=10). Pathogenicity tests were carried out by using three different methods: seed inoculation, soil inoculation and head inoculation. Results showed that *F. culmorum* isolates were the most aggressive on the wheat seedlings and on the head. However, *F. pseudograminearum* isolates were the most aggressive on the crown. High correlations were found between Fusarium isolates aggressiveness on the wheat seedlings and on the head for the two *F.culmorum* groups (FCC: r=0.89 and FCH:r=0.85). These results provide a simple in vitro test to predict pathogenicity of the *F.culmorum* isolates for head blight. This study highlight that *F. culmorum* is the dominant species associated with FHB and FCR in Algeria. Also, this is the first report concerning the identification of *F. pseudograminearum*, *M. majus*, *F. verticillioides* and *F. avenaceum* from wheat in Algeria. [Nora Abdallah-Nekache, Imane Laraba, Christine Ducos, Christian Barreau, Zouaoui Bouznad and Houda Bouregghda (Algeria), *Eur. J. Plant Pathol.*, 2019]. <https://doi.org/10.1007/s10658-019-01673-7>

Effects of Temperatures and Rainfall Variability on the Abundance and Diversity of Caelifera (Insecta, Orthoptera) in Three Natural Environments in the Mزاب Valley, Septentrional Sahara (Algeria). The climatic condition is assumed as the main factor responsible for development and survival of insects; this investigation was conducted to study the responses of Caelifera to temperatures and precipitation variations during 2017 in three natural environments of Mزاب Valley, Ghardaïa, Algeria. A total of 22 grasshopper species were collected, representing four families and eight subfamilies. The subfamily Oedipodinae was the dominant, followed by Pyrgomorphinae and Thrinchinae. Two species: *Sphingonotus rubescens* and *Sphingonotus savignyi* occurred frequently in the three sites. However, only one accidental species, *Eunapiodes* sp. was found. According to our observations, it is clear that the grasshopper diversity was higher in July and August coinciding with the increase in temperature. In such conditions, the precipitation has less influence on species diversity. [Zergoun, Y., Guezoul, O., Sekour, M., Bouras, N., and Holtz, M.D. (Algeria), *Tunisian Journal of Plant Protection* 13 (2): 217-228, 2018].

EGYPT

Relationship between Plant Density and Population Density of *Meloidogyne Incognita* on Eggplant. The effect of different densities of eggplant (*Solanum melongena* L.) on the reproduction and population density of root-knot nematode, *Meloidogyne incognita* was studied under screen house conditions. It was found that there is a positive correlation between eggplant density and population density of root-knot nematode, *M. incognita* in roots i.e., when

number of plants in the same pot increased (1-4 plants/pot), a higher number of nematode juveniles in plant roots occurred. Thus, plant density such as 4 plants if produced, it promoted the number of the hatched juveniles, galls and egg-masses in roots as compared to the plant densities of 1, 2 and 3/pot. However, number of juveniles in soil decreased with increasing plant density. [Mahmoud Mohamed A. Youssef and Wafaa Mohamed A. El-Nagdi, National Research Centre, (Egypt), Pakistan Journal of Nematology, 37 (1):21-24, 2019].

Evaluation of Different Salt-Amended Electrolysed Water to Control Postharvest Moulds of Citrus. The effect of different salt solutions added to electrolysed water (EW) was assessed as sanitising agents against *Penicillium digitatum*, *P. italicum* and *P. ulaiense*. Different settings of electrolysing machine were optimised to improve sanitation. The acidic and alkaline EW combined with thirteen salt solutions were used to treat spore suspension and the count of colony forming units recovered on potato-dextrose agar media was estimated. In addition, the same treatments were applied to spore suspension before inoculating orange fruits, which were incubated at favourable conditions for disease development. Results showed that acidic EW was more effective than alkaline EW in inhibiting growth and disease development of citrus mould pathogens, likely due to a synergetic effect. The EW amended with salt solution showed improved sanitary effect and enhanced disease suppression caused by EW. This showed to be an environmental friendly option to reduce the residue of sanitising agents and fungicide use in conventional processing of citrus fresh fruits. [Ahmed Hussien, Yosra Ahmed, Al-Haythm Al-Essawy and Khamis Youssef, (Egypt), Volume 43,1: pp 10–20, 2018].

Ecofriendly Nanomaterials for Controlling Gray Mold of Table Grapes and Maintaining Postharvest Quality. Biodegradable antifungal nanomaterials are a recent novel measure against plant pathogens. In the present investigation, the synthesis and characterization of some ecofriendly nanomaterials, including silica, chitosan, and copper nanoparticles (NPs) and their combination, were carried out. Their fungicidal activity was studied in vitro and in vivo against *Botrytis cinerea*, the causal agent of gray mold on table grapes. In addition, the effect of those nanomaterials on physical and chemical properties of grape (TSS, TA, TSS/TA ratio and berries colour) were evaluated. Scanning electron microscopy (SEM) and analysis of DNA-binding profile were used to better understand their mechanism of action. SEM showed that chitosan and silica NPs caused inhibition of hyphal growth and/or alteration of hyphal morphology such as cell wall disruption, withering, and excessive septation. NPs interacted with DNA isolated from fungal mats: the highest concentration of chitosan and silica NPs affected DNA integrity and led to a significant degradation. A single application of chitosan or silica NPs at veraison stage was able to reduce gray mold of table grapes. Although further large scale trials are needed, the promising results of this research suggest nanomaterials compounds, i.e. silica and chitosan NPs, as effective antifungal agents for the control of gray mold of table grapes. [Ayat F. Hashim., Khamis Youssef., Kamel A. Abd-Elsalam, (Egypt), Food Industries and Nutrition Division National Research Centre Giza Egypt, Plant Pathology Research Institute Agricultural Research Center Giza Egypt, European Journal of Plant Pathology (January 2019, pp 1–12)].

Evaluation of some Biocontrol Agents to Control Thompson Seedless Grapevine Powdery Mildew Disease. This investigation aimed to evaluate the effect of some biocontrol agents against the powdery mildew of Thompson seedless grapevines. The study was carried out during the two successive seasons (2016 and 2017) at a private organic vineyard orchard located at El Beheira Governorate, Egypt. *Uncinula necator* (syn. *Erysiphe necator*) is a fungus that causes powdery mildew of grapevine. It causes severe loss in yield quantity and quality. Application of different biocontrol agents, e.g., *Trichoderma harzianum*, *T. hamatum*, *T. viride*, and their combinations, as well as the Blight stop (*Trichoderma* spp.), a commercial biocide and micronic sulfur, was an attempt to control the disease. The mixture of the three *Trichoderma* spp. showed the highest efficacy (80.16 and 89.95%) of controlling the disease incidence and severity in the two seasons 2016 and 2017, respectively, followed by the treatment of Blight stop + micronic sulfur (77.12 and 84.02%), while micronic sulfur showed the lowest effect (57.02 and 41.32%). At all treatments, the yield was increased and the chemical characteristics, e.g., “total sugars, total soluble solids (TSS), total anthocyanin (% in mg/100 g F.W.), and total phenols (mg/g berries as gallic acid equivalent)” of berries were improved. On the contrary, the percentage of total acidity was decreased at all treatments than in the control. [M.F.A. Ahmed (Egypt), Egyptian Journal of Biological Pest Control, 28:93, 2018.]

Effect of Gamma Irradiation and/or Certain Entomopathogenic Fungi on the Larval Mortality of *Galleria mellonella* L. The present investigation was carried out to study the effect of LC50 of the entomopathogenic fungi (EPF), *Paecilomyces lilacinus* and *Beauveria bassiana*, on larval mortality of the greater wax moth (GWM), *Galleria*

mellonella L., under laboratory conditions and also to study the effect of different doses of gamma irradiation (70, 100, 125, and 150 Gy), separately or combined with the LC50 of the isolates of the EPF, *B. bassiana*, and *P. lilacinus*, on the second-instar larvae of *G. mellonella* larval mortality. The combined treatment of gamma irradiation and EPF increased the larval mortality rates than that at each treatment alone. The highest percentage of larval mortality was 78 and 84%, with 125 Gy + *B. bassiana* in the case of F1 male and F1 female, respectively. According to the obtained results, the gamma irradiation increased the pathogenicity of the fungi against the tested larvae. The combination between the two control tools may provide satisfactory control of the insect-pest, especially, in the storage. [Hussein F. Mohamed, Thanaa M. Sileem, Samira E. M. El-Naggar, Mohamed A. Sweilem, Ahmed A. M. Ibrahim and Ola E. A. A. El-khawaga (Egypt), *Egyptian Journal of Biological Pest Control*, 28:95, 2018].

IRAQ

Integrated Management of the *Fusarium* Vascular wilt Disease of *Cucurbita pepo* in Iraq. *Fusarium* vascular wilt disease is one of the most harmful diseases that affect a broad range of plant species including zucchini (*Cucurbita pepo*). The objective of the research was to investigate the presence of the phytopathogenic fungus *Fusarium oxysporum* the causal agent of the disease in zucchini fields. Forty-five isolates of *F. oxysporum* were isolated from four locations in province of Dyala during 2014-2015. Isolate Foq9 was the most virulent in the *in vitro* pathogenicity test. *In vitro* significant suppression efficiency were observed of the fungicides Topsin M 70 WP (Tm) and Tecto 500 SC (Tc) and two botanical extract solution extracted from Garlic (Gr) and Ginger (Gn) against the pathogen on the potato sucrose agar (PSA). In greenhouse experiments, all of the agents decreased the percentage of disease incidence and severity significantly, while the tetra-inoculum (Tm+Tc+Gr+Gn) was superior which exhibited 0% disease incidence and severity compared to the negative control which was 95% and 79% respectively. Also the combined application of the botanical extracts (Gr+Gn) reduced disease incidence and severity significantly. All of the treatment increased plant growth criteria represented by dry weight of the plant compared to the control. [Safaa N. Hussein (Iraq), *Journal of Agricultural and Marine Sciences*, 23: 40–47, 2019]. DOI: [10.24200/jams.vol23iss1pp40-47](https://doi.org/10.24200/jams.vol23iss1pp40-47)

Efficacy of New Insecticide for Managing the Spring Generation of Dubas Bug, *Ommatissus lybicus*, in Diyala, Iraq. A field trial was conducted to evaluate the efficiency of the insecticides sulfoxaflo (Closer 240SC) at different doses and spinetoram (Radiant 240SC) at a single dose against dubas bug, *Ommatissus lybicus* in the Baqubah region, Diyala province, Iraq. The trial was conducted on the spring generation of dubas bug, in 2011, by ground spray application on infested date palm trees. Closer 240SC insecticide was used in different concentrations as follows: 3.5, 7, 10 and 14 ml/30 Liter of water while Radiant 240SC insecticide was used in a single concentration of 15 ml/30 Liter of water. The results of the trial revealed very good control of the numbers of nymph and adult population of dubas bug by using different concentrations of Sulfoxaflo. At 35 days after the application, the dose of 3.5 ml/30L of Closer 240SC reached 89.3% corrected efficacy, while at 7, 10 and 14 ml/30L the corrected efficacy ranged between 93.3-94.6%. At the same interval after application, Radiant 240Sc at 15 ml/30 reached 91.5% efficacy. [Qais Kadhim Zewain, Hussein Ali Salim (Iraq), Mahmood Matrood Salman, Aris Chloridis and Amr Moussa, *Journal of Tikrit University for Agri. Sci.*, Vol. (18) special issue , 1st International Conference of Agricultural Researches, 10-11 April 2018].

Evaluation of an integration between the nanosized Zinc Oxide and two cultivars for control of damping-off disease on sunflower crop. Damping off disease, caused by *Rhizoctonia solani*, leads to severe worldwide economic losses in many important crops including sunflower. The current strategies to control this disease are inadequate. This study addresses the possibility of using ZnO nanoparticles (NPs) and two cultivars of sunflower to be employed in control strategies. The ZnO NPs were significantly ($p = 0.01$) more inhibitory to *R. solani* growth at high concentrations than lower treatments indicating a dose-dependent effect. This effect was found to be fungistatic when fungal inoculum was transferred to standard medium after challenging with the ZnO NPs. Additionally, the two cultivars of sunflower tested were found to be susceptible to pathogen *R. solani* showing a high percentage of damping off incidence and severity of symptoms. Although, most treatments of ZnO nanoparticles applied did not significantly reduce the damping-off incidence, the disease severity was significantly reduced. This was particularly clear when the seedlings of the two sunflower cultivars were sprayed with ZnO NPs two days prior to planting the best suppression ranged from 100 to 53.12% in Euro flower cv. and from 95.31 to 54.68% in Flame cv. [Adnan A.

IRAN

Fruit Rot caused by *Neoscytalidium hyalinum* on Melon in Iran. *Cucumis melo* fruits showing symptoms of irregular brown lesions were collected in Mohr region, Fars province, Iran. Based on morphological characteristics and DNA sequence of the internal transcribed spacer (ITS) region, the isolated pathogen was identified as *Neoscytalidium hyalinum*. Arthroconidia were isolated from fruit rot symptoms inoculated in a pathogenicity test. This study provides the first report of the occurrence of *Neoscytalidium hyalinum* on *C. melon* causing fruit rot symptoms in Iran. [Maryam Mirtalebi, Fatemeh Sabahi and Zia Banihashemi (Iran), *Australasian Plant Pathology*, 14:8, 2019]. <https://doi.org/10.1007/s13314-019-0338-5>

MOROCCO

Detection and Prevalence of Viruses Associated with Sugarbeet in the Tadla Region of Morocco. Fifty-five soil samples were collected from sugarbeet fields with rhizomania occurrence in the region of Tadla. BNYVV was ascertained by RT-PCR in 40 out of 55 fields surveyed and the positive samples were subsequently examined for the presence of the different pathotype of BNYVV. Using the same technique, a survey was simultaneously undertaken to identify the occurrence of other soil-borne viruses, which might frequently associate with BNYVV such as beet soilborne virus (BSBV), beet soilborne mosaic virus (BSBMV) and beet virus Q (BVQ). Results indicated that most samples were infected with A-type BNYVV, but only 9% of the samples were positive for B-type BNYVV. BNYVV (72.7%) was the most frequently detected, followed respectively by BSBV (36.36%) and BVQ (30.9%). However, P-type BNYVV was not detected at all. Our results also indicated the likely absence of BSBMV in the Tadla region. Surprisingly, among the 40 BNYVV-infected samples, 17 were also infected with BVQ and 20 with BSBV. In conclusion, BSBV occurred in triple infections with BNYVV and BVQ. In addition, there was only one sample revealed positive for both viruses BNYVV-B and BVQ and four samples for BSBV infection. Therefore, this study is the first investigation of BSBV and BVQ in fields-grown sugarbeet of Morocco. [Fatima Nouayti, Abdessalem Tahiri, Ilham Madani, Abdelali Blenzar, Rachid Lahlali (Morocco), *Journal of Plant Pathology*, 101(1):173–177, 2019].

SYRIA

First Record of the Fungus *Trichoderma harzianum* Rifai as Natural Endophyte in Cucumber Plants in Syria. Cucumber plants were obtained from a field in Al Borgan region (Jableh) on March and April 2018, and surface sterilization with sodium hypochlorite 5% and ethyl alcohol 90%. Different plant parts were cultured on PDA medium (Potato Dextrose Agar). The fungus *T. harzianum* was found naturally as endophyte in the aerial parts of cucumber plant (stem and leaves). Currently, survey of other natural endophytic fungi in cucumber plant is continuing in this and other regions. [Mohammad Ahmad, Ibtisam Gazal, Lobna Rajab (Syria), *Plant Protection Department, Faculty of Agriculture, Tishreen University, Lattakia, Syria*, 2019].

Endophytic Ability of the Fungus *Beauveria bassiana* (Bals.) Vuil. in Cucumber Plants in the Laboratory, and its Systemic Transfer Inside the Plant. The ability of the entomopathogenic fungus *Beauveria bassiana* (Bals.) Vuil. to be an endophyte in cucumber plant was studied in the laboratory by soaking cucumber seeds (before planting) in spore suspension (concentration 4.9×10^7 spore/ ml), for two hours. In a second treatment, 14 days cucumber plants were irrigated with the same concentration of spore suspension. The experiment was performed at the Plant Protection Research laboratory, Faculty of Agriculture, Tishreen University during November 2018. Results showed the ability of the fungus *B. bassiana* to colonize the plant tissues and move systemically in non-treated parts of the plant. Leaves colonization rate reached 30 and 33.3 % in both treatments, one month after the beginning of the experiment, respectively. The fungus movement reached 66.6 and 83.3 % two months after the beginning of the experiment, respectively. This type of bioassays is considered the first of its kind in Syria in relation to the endophytic entomopathogenic fungi in cucumber plants. Currently, semi field and field bioassays were interpolated. These findings open a new horizon to understand the role played by this group of fungi in nature which is still not fully

understood. [Mohammad Ahmad, Ibtisam Gazal, Lobna Rajab, (Syria), Plant Protection Department, Faculty of Agriculture, Tishreen University, Lattakia, Syria, 2019].

TUNISIA

Optimization of Simple DNA Extraction Method Suitable for Diverse Microorganisms. To date no simple DNA extraction method was reported to be efficient and adapted to various organisms and microorganisms. Moreover, this approach is hard, time consuming and rely on the use of liquid nitrogen. In order to obtain highly purified nucleic acids free of contaminants that could interfere with the amplification reaction during PCR, adequate and easy extraction methods should be developed. During this work, an efficient, fast and economical method for the isolation of high-quality DNA from fungi, bacteria and viruses is described. Those DNA extractions were performed without the use of liquid nitrogen. Besides, the protocol used allowed obtaining very good DNA concentrations that can be utilized at 1/50, regardless the origin of the analyzed samples, whether freshly collected, conserved in calcium chloride, or frozen at -80°C for long time (more than 10 years). The quantity and the quality of the extracted DNA by this method are enough high to perform cloning, PCR simplex or multiplex and also other DNA manipulation techniques. [Zammouri, S., Kalai-Grami, L., and Mnari-Hattab, M. (Tunisia), *Tunisian Journal of Plant Protection*, 13 (2): 145-155, 2018].

Endophytic Bacteria from *Solanum nigrum* with Plant Growth-promoting and *Fusarium* wilt-Suppressive abilities in Tomato. Fifteen endophytic bacterial isolates from *Solanum nigrum* and *S. nigrum* var. *villosum* stems were screened for their plant growth-promoting potential and antifungal activity against *Fusarium oxysporum* f. sp. *lycopersici* (FOL). Isolates SV65, SV68 and SV109 were the most efficient in controlling the development of the disease (77-92%) and in improving tomato growth (32-62%) compared to the controls. They were characterized and identified by using 16S rDNA sequencing genes as being *Bacillus amyloliquefaciens* subsp. *plantarum* for the strain SV65 (KR818073) and *B. methylotrophicus* for the two strains SV68 (KR818074) and SV109 (KR818076). Gas Chromatography-Mass Spectrometry analysis of the n-butanol extract from *B. amyloliquefaciens* subsp. *plantarum* SV65 matched phthalic acid, mono (2-ethylhexyl) ester as major compound. The bacterium *B. amyloliquefaciens* subsp. *plantarum* SV65 and *B. methylotrophicus* SV109 were shown to be chitinase-, protease-, pectinase-, phosphatase-, and indole 3-acetic acid (IAA)-producing agents. Furthermore, *B. methylotrophicus* SV68 produced chitinase, pectinase, and IAA (28.49 µg/ml), and *B. amyloliquefaciens* subsp. *plantarum* SV65 excreted siderophores and oxalic and malic acids. This study demonstrates that *S. nigrum* and *S. nigrum* var. *villosum* can be potential plant species for isolation of endophytic bacteria serving as biocontrol and biofertilizing agents for the improvement of production of tomato grown in FOL infested and non-infested soils. [Aydi-Ben Abdallah, R., Jabnoun-Khiareddine, H., Nefzi, A., Ayed, F., and Daami-Remadi, M. (Tunis), *Tunisian Journal of Plant Protection* 13 (2): 157-182, 2018].

Effect of Soil Management on Biodiversity of Nematode Communities as a Biological Indicator of Soil Quality in Oasis agro-ecosystem of Kebili. Nematode communities were monitored in 26 oases in Kebili under various agricultural systems. Differences between studied oases consisted in tillage frequency, soil amendment type (manure or manure+ mineral fertilizers), cover crops and field age. In addition, this study evaluated the importance of the C-P (Colonizer-Persistent) triangle and the faunal profile (representation of enrichment index vs. structure index) as a biological indicator and monitoring tools in support of soil quality assessment. The results showed that nematode communities were composed by 10 bacterial feeders (Ba), 3 fungal feeders (Fu), 12 plant parasites (PP), 4 omnivores (O), 1 predator (P) with the dominance of (Ba) and (PP) in all surveyed oases. The nematode communities differed slightly depending on oases age. Bacterial feeders and *Discolaimium* genus were found in both young and old ones. *Plectus* genus (Ba) was found only in young oases while *Xiphinema*, *Criconea* and *Trichodorus* genera (PP) were absent in these oases. Few nematode taxa were affected by soil amendment type and cover crops including some bacterial and fungal feeders. The highest taxa richness was recorded in bare soils and in field with tillage frequency of 2 or 3 years. The lower MI (Maturity index) value was recorded in old oases. Most of studied oases were characterized either by a high soil disturbance level with a high abundance of cp-1 group (Bacterivore nematodes with c-p value =1) as an indicator of a disturbed food web or by a stressed soil with high abundance of cp-2 group (Bacterivore and fungivore nematodes with c-p value = 2) as an indicator of degraded food web. Only few sites showed a maturing and structured food webs with respectively low to moderate soil disturbance level and undisturbed soil. This study highlighted also that some nematode genera may potentially serve as differential bio-indicators of

soil disturbance. [Larayedh-Bettaieb, A., Hajji-Hedfi, L., Sanchèz-Moreno, S., Chihani-Hammas, N., Regaieg, H., Aoun, F., Horrigue-Raouani, N., and Belkadhi, M.S. (Tunisia) , *Tunisian Journal of Plant Protection*, 13(2):183-200, 2018].

Toxicity of the Active Fraction of *Pergularia tomentosa* and the Aggregation Pheromone Phenylacetoneitrile on *Schistocerca gregaria* Fourth-instar Nymph: Effects on behavior and Acetylcholinesterase Activity. Chemical insecticides remain the most used approach in locust control although they present a serious menace to human health and the environment. The search for alternative control methods, efficient and environmentally friendly, has become indispensable. The aim of this work is to study the effect of the aggregation pheromone, phenylacetoneitrile, alone or in combination with the active fraction of *Pergularia tomentosa* on *Schistocerca gregaria* fourth-instar nymph. Toxicity bioassays showed that the combination of phenylacetoneitrile with the active fraction of *P. tomentosa* significantly increased nymph mortality. Results also showed that the aggregation pheromone caused significant mortality especially after 6 hours of exposure. The pheromone also caused neurotoxic effects on *S. gregaria* nymph due to the disturbance of the acetylcholinesterase activity. We also noted the presence of cannibalism phenomenon. Phenylacetoneitrile seems to have an effect on phase ploypheism of *S. gregaria* imagos that exhibit specific traits to the solitary phase. [Miladi, M., Abdellaoui, K., Ben Hamouda, A., Boughattas, I., Tlili, H., Mhafdhi, M., Acheuk, F., and Ben Halima-Kamel, M. (Tunisia), *Tunisian Journal of Plant Protection*, 13 (2): 201-216, 2018].

Insecticidal Effects of Siliceous Sands as Preservative for Maize and Cowpea Storage. Siliceous sands were tested in maize and cowpea storage against pests. The purpose of this study is to evaluate the insecticidal activity of two sands applied at increased doses of 1, 2, 3 and 4g/250g of maize and cowpea on *Sitophilus zeamais*, *Callosobruchus maculatus*, *Prostephanus truncatus* and *Tribolium castaneum* adults. Sands (Diobe1 and 2) were sieved and the two particles sizes retained for the study were 1×1 mm and 0.3×0.3 mm. Untreated plots and Actellic® served as control and the experiment was conducted during one month. Each dose was repeated 4 times. Results revealed a high efficiency of siliceous sand against these four pests with greater efficiency of Diobe1. Mortality of 85% was observed with Diobe 1 against 100% for actellic® and 0% for untreated plots. Emergences progressed inversely to the mortality. Damage and losses reached respectively 25% and 6% with untreated plots. *P. truncatus* caused nearly 16% of damages and 3% of losses at lower doses. However, with 4g/250g of stored substances (1.6%, w/w), the losses were below 1%. Insects did not show the same sensitivity to treatment and fineness of particles sands inhibits their action as long as the dose increases. [Cissokho, P.S., Welle, F., Gueye, M.T, Diarra, K., Sow, E.H., and Lognay, G. (Tunisia), *Tunisian Journal of Plant Protection* 13 (2): 229-241,2018].

PLANT PROTECTION NEWS IN THE ARAB COUNTRIES AND NEAR EAST

❖ Graduate Students Activities (Master and Doctorate Thesis)

New Record of Six Species of Genus *Agrotis* Ochsenheimer 1816 (Lepidoptera: Noctuidae: Noctuinae) In Baghdad/ Iraq. Taxonomic study was conducted on genus *Agrotis* Ochsenheimer 1816, belongs to subfamily Noctuinae and to the Family Noctuidae and to suborder of Heterocera (moths) of the Order Lepidoptera in middle of Iraq during 2017-2018, six species were recorded, including two new species recorded for the first time in Iraq, that is *Agrotis biconica* and *Agrotis bigramma* which is collected seven 7 insects (males and females) belongs to first species and two 2 insects to second species In the province of Baghdad / Al- Ameriya. The insects indented by used taxonomic keys depended on morphological characters. Used camera Lucida to draw bodies' part and picture by digital camera. [Hussein Kattan Mohammed and Awatif Abdul- Fatah Hamodi (Iraq), Dept. of Plant Protection, College of Agri., Baghdad University/ Baghdad- Iraq, Biochemical Cellular Archives, Vol 19, No. 2, 2019, (Doctorate, 2019)].

Study of some Biological and Ecological Aspects of Peach Fruit Fly *Bactrocera zonata* (Saunders) (Diptera: Tephritidae) and Evalution of some Integrated Control. The Peach Fruit Fly *Bactrocera zonata* (Saunders) is considered an important economic insect in the world. This pest infests many fruits and vegetables and causes large economic losses in agriculture production. The insect was monitored in 2016 in the citrus orchards of

Wasit province and spread to most of the provinces and caused high losses in fruits of citrus and deciduous fruit trees. The results of the laboratory and field studies showed that all the biological aspects of the insect were affected by the difference in temperature, the shortest at $30 \pm 2^{\circ}\text{C}$ and the longest at $20 \pm 2^{\circ}\text{C}$. It was found that sexual reproduction is the main way to produce fertile generations in the peach fruit fly, in spite of the females was laid eggs in the case of non-mating, but the eggs do not hatch, in all different temperature. The results of the study showed that *Pseudomonas cichorii* is associated with the egg laying tool for the peach fruit fly, which confirms that the insect transports these bacteria to the fruit tissue in the egg laying area, The study also showed that the second type of bacteria *Pectobacterium carotovorum*, which accompanies the fruit tissue in the egg laying area and larvae exit openings, is the main cause of mild or soft rot on the fruit. The results of the study confirmed the recording of parasitoid *Psytalia concolor* (Szepligeti, 1910) (Hymenoptera: Braconidae) on peach fruit fly as the new record in Iraq on the peach fruit fly. The results of the study showed the infection of the larvae and pupa of the insect by *Bacillus thuringiensis* which causes lack of movement, activity of the larvae, the non to feeding, the exit of brown spots on the body of the larvae to turn the color of the larva into dark brown and the death, As for pupal stage, one of the most important symptoms of infection is the failure of the emergence of adults and in the case of emergence insects are distorted and die after the emergence. The adult insects begin to appear during the last week of March and the first week of April and the highest density of the insect during September, November and October, and that the insect 6 - 7 generations a year, and the insect spends winter to adults and pupal stage. The results of the study showed that adult insects of the peach fruit fly were not attracted to food bait (Ceratrap, Acetic acid, Dap fertilizer, Ammonium bicarbonate). The traps were different in catching the male insects due to the highest of traps, where the local trap higher attraction effect during the study period, which did not differ significantly from the Jackson trap which catches. While Tphri trap differed significantly from the two traps, the mutant red wasp trap recorded a minimum during the study period, the results indicated that there were no statistically significant differences in the number of males caught in the different height traps, the difference in the color of the trap has a significant effect in attracting and catching male insects. The yellow traps have surpassed attracting and catching the highest number while the red traps were last rank for the study period. The seasonal distribution of peach fruit flies is proportional to the presence of fruits and maturity in the field, where Apricot infestation occurs in May and June, Peach infestation in June and July and Figs in July and August, and Mango in August, September and November, Oranges in October, November, Sour orange in November, December. The results showed that mandarin was the most preferred citrus species, with an overall infestation percentage of 22.4% and larvae rate of 11.9 larvae / fruit, while not recorded any infestation to the fruits of lemon sour. The program of integrated control, which includes elements sex lure attractants Methyl eugenol and Ceranock traps (attract and kill) and commercial products of entomopathogenic fungi *Beauveria bassiana*, *Metarhizium anisopliae* and Recharge, Which have been applied in the summer program on fig and autumn program on citrus proved to be effective in reducing the number of insects catching and percentage of fruit infestation, The treatment was significantly two fold higher than commercial products of entomopathogenic fungi. [Ali Hassan Harfsh Abu-Ragheef (Iraq), Supervisor Radhi F. Al-Jassany, Department of Plant Protection, College of Agricultural Engineering Sciences, University of Baghdad (Doctorate dissertation, 2019)]

Detection of Toxigenic Factors and Resistance Metabolites. During this study, several research projects carried out in Algeria indicate the importance of Fusarium head blight caused by different species of Fusarium. The interest of this present work is to compare two newly selected durum wheat lines (G1: Saadi \times Waha 431 and G4: Ardente \times Siméto 133) with their sensitive parents (G9: Siméto, G10: Ardente white beard and G11: Waha "S") for their behavior with respect to this disease. These lineages are homozygous, fixed, obtained by classical genealogical selection and composed of F15 seeds from diallel crosses between 4 parental varieties: Saadi, Siméto, Ardente and Waha. For this purpose, the evaluation of the disease was carried out in the field for two years. During the first year (2013-2014), two lines were tested with 10 Fusarium isolates originating from Algeria, respectively: 6 isolates of *Fusarium culmorum* (FCT5, FCT7, FC10.11, FC8.12, FC9.12, FC1.12), 1 isolate of *F. graminearum* (FG3.11), 1 isolate of *F. cerealis* (FC2.12) and 2 isolates of *F. pseudograminearum* (FPG1.11, FPG2.11). These isolates were obtained from diseased durum wheat. In the second year (2014-2015), three parental varieties were added and tested with four selected *F. culmorum* isolates from the previous year's collection. The isolates used all showed the ability to produce DON and a little 3-ADON, except for two isolates of *F. culmorum* (F.C.T5 and F.C.T7) that produce NIV and some FX. This research first focused on monitoring the symptoms progression during grain filling, after artificial inoculation on ears by Fusarium isolates in order to evaluate the differences in behavior of wheat genotypes. In a second step, a biochemical characterization of trichothecenes B (TCTB), ergosterol and phenolic acids was carried out in the laboratory. The results revealed that cross-bred lines had higher resistance than their parents with TCTB accumulation and significantly lower ergosterol. In our culture conditions, no genotype has shown complete

resistance (immunity) to the disease. At least, the G1 line has a good level of resistance in our conditions. Comparison of these two lineages with their parents also shows a significant difference in the levels of phenolic compounds (free and bound) as a possible factor of resistance of durum wheat to Fusarium wilt and tricothecene B accumulation. [Salah Hadjout (Algeria), (Département de botanique, Ecole Nationale Supérieure Agronomique, Algiers, Algeria, (Doctorate dissertation, 2019))].

Molecular and Chemical Diagnosis of Dodder Weed (*Cuscuta* spp.) and Stimulating Physiological Resistance in Eggplant. The genus *Cuscuta* is represented in 14 species distributed in all regions of Iraq. Most species that belong to this genus cause a major problem in the fields of many agricultural crops including Solanaceous members which are severely affected by this parasitic plant. Geographical distribution, host-range and phenotypic diagnosis supported by molecular diagnosis as well as host-parasitism (histopathology) studies were conducted to detect the parasitic species of *Cuscuta* on the Solanaceae, and the most widespread. The average infection ratio of *Cuscuta* species on this family members was as high as 72.07 % in provinces of Najaf, Kerbala and Babylon. Ten *Cuscuta* races within three species were registered as new races nationally then submitted to NCBI database. *C. pentagona* and *C. australis* were recorded for the first time in Iraq in the presented study. However, *C. campestris* was found to be the most predominant over other species parasitizing solanaceae plants. In this study, it was showed for the first time the ability of *C. campestris* to parasitize on eggplant fruits. [Bashar Khadum Algori, Supervisors: Dr. Fadel Alfadel and Dr. Fadel Alsaahaf, Kufa University, College of Agriculture, Plant Protection, Iraq, (Doctorate dissertation, 2019)].



Evaluation Efficacy Nanoparticle Soils and some bio agents to Induce Systemic Resistance against Fusarium wilt caused by *Fusarium oxysporum* f.sp. *lycopersici* on Tomato in Greenhouse. This study was conducted to assess the efficacy of nanoparticle soil (is soil supported or mixed nanoparticles of MgO NPs) and some bio-agents (two isolates of bacteria are used as *Streptomyces* sp. and *Pseudomonas fluorescens*) for systemic resistance induction and controlling Fusarium wilt disease on tomato caused by *Fusarium oxysporum* f.sp. *lycopersici* in the experiment of pots and plastic house. The treatment of nanoparticle soil and two isolates bacteria was superior in prevention infection in the experiment of pots and plastic house. Results indicated significant differences in biochemical indicators to induce systemic resistance (ISR) in tomato plants, Treatments used showed high efficacy to affect Peroxidase, PAL and total Phenols content, and increased growth parameters including growth wet and dry weights, shoot and root system, And plant content of nutrients element, total protein and chlorophyll content. [Shaker I. Al-Dulaimi, Supervisor: Halima Z. Hussein (Iraq), Department of Plant Protection/ College of Agricultural Engineering Sciences / University of Baghdad, (M. Sc. thesis, 2019)].

Efficiency of Certain Compounds as anti-viral Diseases on some Cucurbits. Begomoviruses have a significant impact on crop production worldwide. In this study, incidence of these viruses were screened in cucumber, zucchini and melon plants in greenhouses and open fields. Obtained results showed the presence of these viruses on the three crops with a rate of 70% in cucumber. Infection in zucchini samples reached 90% in the open fields while in watermelon was about 10%. DNA was extracted from the ELISA-tested samples and the polymerase chain reaction (PCR) test was performed using primer pair for coat protein gene. Then two-way sequences were performed compared to sequences available in GenBank. The cucumber samples were infected with watermelon chlorotic stunt virus (WmCSV), tomato yellow leaf curl virus-Oman (TYLCV-OM) and Tomato leaf curl Palampur virus (ToLCPMV). All melon samples were infected with WmCSV and zucchini was infected with TYLCV-OM. The efficacy of antivirals using both eugenol and morozydine hydrochloride was evaluated on cucumber plants, which were infected by whitefly reared in cages on plants infected with TYLCV-OM virus. This virus was the most prevalent in cucumber and zucchini cultivars in Al-Ahsa. Results showed that plants treated with eugenol and morozydine hydrochloride were better in growth rate and showed no symptoms at the same rate as in non-treated and untreated plants. Demonstrating their ability to reduce the spread of the virus within the plant. Eugenol has been shown to be more effective at the 300 ppm than morozydine hydrochloride. The presence of protein in the treated plants, the presence of the virus in all plants was shown to be treated with murozidine hydrochloride, as well as in the use of concentrations of 100 and 200 ppm of eugenol solution, while the presence of the virus in plants treated with 300 ppm concentration of eugenol On the ability of this substance to stop the spread of the virus within the plant

at this concentration, while using a concentration of less than 300 ppm was able to reduce the severity of the disease and symptoms with the presence of the virus. Therefore, this study recommends the application of eugenol in order to increase resistance and improve the growth of plants and reduce the spread of the virus within the infected plant, which contributes to reducing crop yield losses. [Ahmed Alamer, Supervisor: Khalid A. Alhudaib, and Sherif M El-Ganainy, College of Agricultural and Food Science, Plant Protection Department, King Faisal ,University Saudi Arabia, (M. Sc. thesis, 2019)].

Efficiency of some Biological Parameters in the Induction of Resistance against a Virus *potyvirus* Maize dwarf Mosaic for some breeds and their Individual Hybrids of Maize crop (*Zea mays L.*). The field experiment was carried out in the Qadisiya area of the Samarra / Salah al-Din Governorate for the agricultural season of 2016-2017 to test the efficiency of some biological treatments, which consisted of *S. platensis* , *C. Sinensis* and *B. subtilis* in induction of resistance against *Potyvirus Maize dwarf Mosaic virus* and the reduction of the negative effect of the virus, for the characteristics of the proportion and severity of the infection and the coefficient of severity of infection and height of the plant and the guide of paper area and the amount of chlorophyll and the number of grains and the weight of 300 grains and the individual plant results Proved the results of the experiment as follows:

The required packages for molecular diagnosis at volume 237 bP using three of the diagnostic prefixes using RT-PCR technology. The complementary treatment of *S. platensis* with hybrids (1×2) in the index of paper area and individual plant yield was superior and gave the triple integrative treatment of *S. platensis* with *C. Sinensis* with *B. subtilis* significant effect on leaf volume reached (2.36 cm²), the amount of chlorophyll (56.97) Spad, and the treatment of *B. subtilis* in the traits of plant height after infection and emphysema. The treatment of B.S on the rest of the transactions by an increase in the severity coefficient of infection of the individual plant, 0.54. (2×1) in the traits of plant height after injury and flowering and the evidence of paper area after flowering, the amount of chlorophyll and the number of seeds of cloves and weight of 300 tablets and the individual plant and the proportion and severity of infection. The father showed (1) a union of the general ability to treat SP + BS for all the attributes and treatment of (SP + B.S. + CO) for all the traits except for the recipe and the father (3) for the treatment (SP+CO) Grain and the eighth treatment and the characteristics of the height of the plant and the number of cloves and seeds. That the effect of the special ability on the union was desirable for the hybrid (1×2) for the SP + B.S + CO + coefficients for all the traits under study. The sovereign variance values were more than the additional variance of all coefficients and attributes. The values of inheritance in the broad sense were high for all traits except for the treatment of B.S and SP + CO for plant status and treatment SP + CO and B.S the area index and the third in the weight of 300 tablets (medium) and low for the treatment of B.S and SP + CO in the area index directory. That the values of inheritance in the narrow sense were low for all the parameters and characteristics under study, except for the treatment of SP+CO + B.S in the directory of the area index, if they were medium, and that the degree of sovereignty was greater than the correct one for all the transactions and the studied traits. The predicted genetic improvement as a low percentage of all traits and coefficients with the exception of the control treatment in the individual plant yield was moderate. The hybrid (1×2) has a significant hybrid strength and is desired for the largest number of transactions in the number of grains of cloves and the recipe of 300 tablets of the individual plant and the hybrid (1×3) in the number of seeds of cloves and hybrids (2×3) and individual plant yield. The strength of the hybrid was studied and the coefficients were given a significant effect, which was distributed differently according to the parents and the hybrid used. [Sahar Mahmood Ahmad Alsamarrey, Assistant. Maadh Abd Alwahab AL-Fahad and Ahmed Hawas Abdulla, International Conference of the Faculty of Science, University of Tikrit, Iraq (M. Sc. thesis, 2018)].

❖ Some Plant Protection Activities of FAO and Other Organizations

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

Summary of the RPW the Ministerial Meeting for Date Palm Producing Countries to Support FAO Trust Fund and Regional Program for Red Palm Weevil Management

Date palm producing countries from Near East and North African countries meet in Abu Dhabi at 9 March 2019, the meeting aims to support the trust Fund established by FAO to contain the spread of Red Palm Weevil, one of the most transboundary invasive pest species.

The meeting is a follow up of the High-level meeting on Red Palm Weevil management held in Rome, Italy (FAO/HQ) March 2017; date palm producing countries agreed on the establishing a Red Palm Weevil Eradication Trust Fund in support of the implementation of the Framework Strategy for Eradication of Red Palm Weevil, and reaffirmed their commitment to support national, regional and global efforts to combat Red Palm Weevil. The regional program have been launched by FAO during the international meeting on “Innovative and Sustainable Approaches for the Control of Red Palm Weevil” in Bari, October 2018. Positive responses have already been received from some countries and in particular pledges from the Kingdom of Saudi Arabia (USD 2 Million) and from the Sultanate of Oman (USD 100,000).



UAE have pledged to host a donor meeting to support RPW Trust Fund, FAO and Minister of Climate Change and Environment for the United Arab Emirates send the invitations to the donors and invited countries. The meeting was organized by Khalifa International Award for Date Palm and Agricultural Innovation (KIADPAI) under the Patronage of His Excellency Sheikh Nahyan Bin Mubarak Al Nahyan, Minister of State for Tolerance. The Objective of the donor meeting is to implement trust fund to its planed budget for the region of USD 20.0 million. The meeting have been participated with high Ministerial representative from 16 date palm producing countries (Algeria, Bahrain, Egypt, Iraq, Mauritania, Sultanate of Oman, Palestine, Tunisia, United Arab Emirates, Yemen, Jordan, Libya, Kingdom of Saudi Arabia, Sudan, Syria and India) and 9 international organization (FAO, IFAD, Abu Dhabi Fund For Development, AOAD, CIHEAM Bari, ICARDA, ICBA and KIADPAI)

The meeting starts by a welcome statement from H.E. Eng. Saif Mohamed AlShara “Assistant Undersecretary, Sustainable Communities Sector from Ministry of Climate Change and Environment (MOCCA) in UAE”, followed by the statement of H.E. Mariam Hareb Almheiri, Minister of State for Food Security, on behalf of Sheikh Nahyan. H.E. Mariam Almheiri opened the conference and confirm the collaboration of UAE in the management and coordination of the UAE national programme to combat to the RPW in cooperation with the FAO, which will host the multi-donor Trust Fund and provide it with a high calibre base of technical experts in order to help member states to build national capacities to fight the RPW. H.E. announce the pledge of USD 2.0 million from UAE to support the Trust Fund. Then, H.E. Dr. José Graziano da Silva “Director-General of Food and Agriculture Organization of the United Nation” affirm that date Palm producing countries can count on FAO's unwavering support in their fight to contain the spread of Red Palm Weevil, one of the most invasive pest for date palm. The Director-General, thanked the United Arab Emirates, UAE, including H.H. Sheikh Mansour bin Zayed Al Nahyan, Deputy Prime Minister and Minister of Presidential Affairs, and Sheikh Nahyan bin Mubarak Al Nahyan, Minister of Tolerance, and President of the Board of Trustees of the Khalifa International Award for Date Palm and Agricultural Innovation, for hosting the event.

Graziano da Silva praised the UAE's \$2 million contribution to support FAO's five-year regional programme to combat RPW. FAO Director-General also thanked Libya for pledging \$250,000 and confirmed that FAO will continue promoting regional and international collaboration aimed at controlling and eradicating the pest. Previous contributions include \$2 million from Saudi Arabia and \$100,000 from Oman. Along with other palm species, the

transboundary pest threatens the date palm, which, Graziano da Silva said, "has a long heritage for sustaining human lives and livelihoods in hot and arid areas" and is a "fundamental source of income and food security for rural communities as well as a significant contributor to the national economies of the region's countries. This is particularly the case in the Arab Region, which accounts for some 77 percent of world date production as well as almost 70 percent of global date exports.

FAO's five-year regional Red Palm Weevil programme will benefit all countries in the Near East and North Africa region and is expected to reach millions of farmers. The total cost of the programme is \$20 million. In his speech at today's donor meeting, Graziano da Silva outlined the programme, which focuses on three interrelated elements: research, capacity development and, transfer of knowledge and technology. The programme, the FAO Director-General noted, is underpinned by an Integrated Pest Management approach, one that has been particularly successful in Mauritania where the spread of Red Palm Weevil has been curbed, mostly thanks to the active participation of farmers and their cooperatives.

Dr. Thaer Yaseen (FAO regional plant protection officer in NENA region), gave a presentation focusing on the RPW management program, giving the main outlines of framework strategy, regional and international damage, objectives of the program, the main elements of the projects, expected outcomes, geographical distribution and project partners. The main focus was national capacity building and the use of innovative methods for pest surveillance and biological control. A global platform is being established for mapping field data and analytics for better decision making. Remote sensing is being combined with artificial intelligence to map palm trees for improved monitoring of Red Palm Weevil spread. Red Palm Weevil threatens food security and livelihoods, but it can be contained and also eradicated. Graziano da Silva pledges FAO's continued support to Near East and North African countries combating the invasive pest.



Red Palm Weevils

9 March 2019, Abu Dhabi -The Near East and North African countries can count on FAO's unwavering support in their fight to contain the spread of the Red Palm Weevil one of the world's most invasive pest species, the UN agency's Director-General, José Graziano da Silva, said today. Addressing the Red Palm Weevil Donor Meeting in Abu Dhabi, Graziano da Silva thanked the United Arab Emirates (UAE) including Sheikh Mansour bin Zayed Al Nahyan, UAE Deputy Prime Minister and Minister of Presidential Affairs, and Sheikh Nahayan Mubarak Al Nahayan, Minister for Tolerance, for hosting the event. The meeting, co-organized by the UAE Ministry of Climate Change and Environment, the Khalifa International Award for Date Palm and Agricultural Innovation and FAO, brings together agriculture ministers from the Near East and North Africa region and key regional and international organizations. Graziano da Silva praised the UAE's \$2 million contribution to FAO's five-year regional programme to combat Red Palm Weevil. The funding was announced by Mariam Al Mehairi, UAE Minister of State for Food Security, during today's meeting. The FAO Director-General also thanked Libya for pledging \$250,000 and the Arab Organization for Agricultural Development for pledging \$100,000. "FAO will continue promoting regional and international collaboration aimed at controlling and eradicating the pest," he added. Previous contributions include \$2 million from Saudi Arabia and \$100,000 from Oman. "Containing, controlling and ultimately eradicating the Red Palm Weevil is possible and FAO is at the forefront of efforts in this regard," Graziano da Silva said.



The Red Palm Weevil, an insect originating in South East Asia that has spread rapidly through the Near East and North Africa, is the most dangerous and destructive pest of palm trees worldwide. Feeding on the trees' growing tissue from the inside, it is particularly difficult to detect during the early stages of infestation. Along with other palm species, the transboundary pest threatens the date palm, which, Graziano da Silva said, "has a long heritage for

sustaining human lives and livelihoods in hot and arid areas" and is a "fundamental source of income and food security for rural communities as well as a significant contributor to the national economies of the region's countries. This is particularly the case in the Arab Region, which accounts for some 77 percent of world date production as well as almost 70 percent of global date exports.

FAO's Role and Required Support

FAO's five-year regional Red Palm Weevil programme will benefit all countries in the Near East and North Africa region and is expected to reach millions of farmers. The total cost of the programme is \$20 million

In his speech at today's donor meeting, Graziano da Silva outlined the programme, which focuses on three interrelated elements: research, capacity development and, transfer of knowledge and technology. The programme, the FAO Director-General noted, is underpinned by an integrated pest-management approach, one that has been particularly successful in Mauritania where the spread of Red Palm Weevil has been curbed, mostly thanks to the active participation of farmers and their cooperatives.

Two years ago, FAO hosted a Scientific Consultation and High-Level Meeting in Rome to unite the efforts to tackle the Red Palm Weevil. FAO has also joined forces with important partners, such as the Khalifa International Award for Date Palm and Agricultural Innovation; the Arab Organization for Agricultural Development; the International Centre for Agricultural Research in the Dry Areas, the International Center for Biosaline Agriculture, and the Mediterranean Agronomic Institute of Bari (CIHEAM).

FAO is developing simple yet powerful tools to assist farmers in better monitoring and managing the Red Palm Weevil. A mobile app, SusaHamra, is used to collect standard data when inspecting and treating palms and checking pheromone traps for Red Palm Weevil. A global platform is being established for mapping field data and analytics for better decision making. Remote sensing is being combined with artificial intelligence to map palm trees for improved monitoring of Red Palm Weevil spread.

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

DESERT LOCUST SITUATION

Warning level: THREAT

General Situation of the Desert Locust during March 2019 and Forecast until mid-May 2019 provided by the FAO Emergency Centre for Desert Locust (ECLO).

General Situation

Situation improving on Red Sea coast

The Desert Locust situation was slowly improving along both sides of the Red Sea during March as a result of intensive control operations that treated more than 80 000 ha and due to drying conditions. Nevertheless, second-generation breeding continued in those areas of Sudan and Saudi Arabia where ecological conditions remained favourable, giving rise to additional hopper and adult groups, bands and a few swarms. Some adult groups moved to the spring breeding areas in the interior of Saudi Arabia and laid eggs. In southwest Asia, adult groups and a few swarms were breeding on the southern coast of Iran and hatching commenced at the end of March. Adult groups and at least one swarm appeared in adjacent areas of southwest Pakistan in mid-March where they were laying eggs. Control operations were in progress in both countries. Elsewhere, local breeding occurred in eastern Algeria. During the forecast period, locust numbers will decline along both sides of the Red Sea but will increase in the spring breeding areas in the interior of Saudi Arabia, and coastal and interior areas of southern Iran and southwest Pakistan where hopper groups and bands are expected to form. Some of these could eventually form adult groups and perhaps a few small swarms by late May. Adults groups may also appear in the Nile Valley in northern Sudan and breed near cropping areas. Smaller-scale breeding will occur in areas south of the Atlas Mountains in Morocco and Algeria that receive rainfall.

Western Region: CALM

SITUATION. Local breeding commenced in eastern Algeria. There were unconfirmed reports of hoppers and adults in northern Mali. **FORECAST.** Small-scale breeding will occur south of the Atlas Mountains in Morocco and Algeria, but locust numbers will remain low. Limited breeding may continue in northern Mali.

Central Region: THREAT

SITUATION. Control operations continued against second-generation breeding on the Red Sea coast of Sudan, Eritrea, Egypt and Saudi Arabia where hopper and adult groups, hopper bands and swarms formed. Breeding continued in eastern Yemen and started in the interior of Saudi Arabia. FORECAST. Breeding will decline on the Red Sea coast but increase in the interior of Saudi Arabia where hopper groups and bands are likely to form. Adults may appear and breed in the Nile Valley of northern Sudan. Adult groups and perhaps a few small swarms will move from eastern Yemen to Hadhramaut and the central interior of Yemen, and breed if rains fall.

Eastern Region: CAUTION

SITUATION. Control operations were undertaken in southern Iran and southwest Pakistan where breeding by adult groups and a few swarms was in progress. FORECAST. Breeding will continue in Iran and Pakistan, giving rise to hopper groups and bands.

For more up to date information about the Desert Locust situation and forecasts, visit the FAO's Desert Locust website:



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

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

FAO Commission for Controlling Desert Locust in the Central Region – 31st session, Amman, Jordan.

February 2019 The 31st Session and thirty, fifth Executive Committee of the Commission for Controlling the Desert Locust in the Central Region (CRC) concluded in Amman. Held from 17 to 21 February 2019 under the chairmanship of the Hashemite Kingdom of Jordan, the session brought together representatives of member states Egypt, Eritrea, Ethiopia, Iraq, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, Sudan, Syria, Yemen, and the UAE. It was also attended by the senior officer of desert and other migratory pests at the Food and Agriculture Organization of the United Nations (FAO), secretaries of Desert Locust Commissions in the Western Region and Southwest Asia, the director general of the Desert Locust Control Organization for Eastern Africa, and a representative of the United States Agency for International Development.

CRC Executive Secretary Mamoon Al Alawi presented working papers on activities carried out to help member states, including capacity building, research, publications, and reports on the situation of desert locust in the past two

years. The Secretariat also presented a report on a new program to use drones to monitor desert locust as part the early warning system and the prevention strategy.

The meeting also discussed national and regional contingency plans and stressed the need for the member states to be ready in advance to control desert locust outbreaks. All these issues were elaborately discussed to improve and optimize operations aimed at controlling the spread of locust swarms and preventing outbreaks that cause massive damage to crops and pastures. Locust outbreaks have dire consequences for food security and may cause famine and impoverish countries.

The member states agreed to launch a Master's degree program on desert locust sciences in cooperation with the Sudan University for Science and Technology. The participants also stressed the need to conduct applied research to develop performance and improve the competence of locust detection and control workers through training sessions and workshops. They also underlined the importance of partnerships between the CRC and other organizations in the region and cooperation with the Desert Locust Information Unit at FAO headquarters to ensure effective control of the pest.



❖ Plant Protection Activities of IPPC - FAO

The Fourteenth Commission on Phytosanitary Measures (CPM-14) adopted New Standards to Curb the Global Spread of Plant Pests and Diseases

The fourteenth session of the Commission on Phytosanitary Measures (CPM-14) took place at FAO headquarters in Rome from 1 - 5 April 2019. A record number of nearly 500 participants from 144 contracting parties, and 36 observer countries and organizations attended the meeting.

The opening session of the CPM-14 highlighted successes achieved and the future of plant health. In his opening statement, Mr Bukar Tijani, FAO Assistant Director-General of the Agriculture and Consumers Protection Department (AG) acknowledged the CPM's "critical role in ensuring the supply of food and the safe trade of plants and plant products to the world". He added that adopting sustainable agriculture practices, protecting the environment and biodiversity, and facilitating safe trade were all essential for plant health. Regarding the International Year of Plant Health (IYPH) 2020, Mr. Tijani asked CPM participants "to make the most of this once in a lifetime opportunity to raise global awareness of the importance of maintaining healthy plants to help achieve the UN Sustainable Development Goals".



In his congratulatory message, Dr. Villalobos Arámbula, Minister of Agriculture and Rural Development of Mexico, expressed his highly commended the CPM for “its high level of productivity in issuing standards that have been adopted by different governance groups” and added that they have been of great benefit for all countries. He acknowledged that the IYPH 2020 declaration was a big step forward in raising the visibility of plant health and the IPPC.

In his introductory remarks, Dr. Dr. Jingyuan Xia, the Secretary of the International Plant Protection Convention (IPPC) warmly welcomed all CPM participants. He reminded them that CPM-14 was a historic bridge towards the next decade as they will be called upon to finalize the IPPC Strategic Framework for 2020-2030 for its final endorsement at the CPM-15 in 2020. He highlighted that the upcoming IYPH in 2020 is a milestone not only for the IPPC Community but also for the global plant health community.

FAO estimates that annually between 20 to 40 percent of global crop production are lost to pests. Each year, plant pests cost the global economy around \$220 billion, and invasive insects around US\$70 billion.

CPM is the governing body of the International Plant Protection Convention (IPPC) - the only international body charged with setting and implementing phytosanitary standards recognized by governments around the world and the World Trade Organization-SPS agreement to facilitate safe trade and protect plant health.

This year CPM annual session (CPM-14) adopted new international standards for phytosanitary measures to prevent six pests from crossing borders and spreading. The standards, including protocols to block highly invasive pests such as *Xylella fastidiosa* and the oriental fruit fly.

The new IPPC standards adopted during this Session:

- A [new standard to provide guidance on improved fumigation methods](#). This is in response to growing concerns over fumigants that can be harmful to human health and the environment.

The standard sets requirements for temperature, duration, fumigants' quantity to make fumigation effective, and puts forward solutions to lessen fumigation's environmental impact - for example, by using recapture technology to reduce gas emissions.

- [Diagnostics protocols that describe procedures and methods for the official diagnosis of six pests](#), including *Xylella fastidiosa* and the oriental fruit fly (*Bactrocera dorsalis*). Ensuring a correct diagnosis is essential to catalyze rapid actions to manage the pests. Discussions at the week-long CPM meeting (1-5 April), also focused on:

- The programme of the [International Year of Plant Health](#) - proclaimed by the UN General Assembly for 2020. The CPM meeting discussed how the International Year of Plant Health could trigger greater global collaboration, engagement and awareness to support plant health policies at all levels, which will significantly contribute to the 2030 Agenda for Sustainable Development.

- [Commodity and pathway standards](#) to support the setting up of ground rules for countries to commence trade also with the aim of introducing new opportunities for developing countries.

- [Recommendations on high-throughput sequencing \(HTS\) technologies](#), which are in the early stages of development, to detect regulated pests or previously unknown pests, such as new viruses that affect cassava plants.

- Ways to reduce risks of plant pests during their transportation in [sea containers](#).

As of today, the CPM has adopted more than 100 International Standards for Phytosanitary Measures (ISPMs), covering all areas of plant quarantine.



First International Plant Protection Congress, Cukurova University, Adana, Turkey. The First International Plant Protection Congress was held at Cukurova University, Adana, Turkey during the period 10-13 April, 2019. Around 300 scientists from 30 countries participated in this event. The congress program included 27 concurrent oral sessions which covered molecular aspects of different plant protection disciplines such as fungal, viral and bacterial diseases, insects, nematodes, and weeds. The congress program also included a posters session where 84 posters were exhibited. Eight Arab scientists participated in this event, two from Lebanon, one from Syria, one from Tunisia, three from Algeria and one from Iraq. One positive feature of this congress is the high number of presentations made by graduate students, mostly from Turkey. A positive indicator reflecting the interest of young generation in solving agricultural problems using research tools. [Khaled Makkouk, Lebanon, 2019] <http://www.imppc2019.org/>



Visit of the President of the Arab Society for Plant Protection to the Higher National School of Agronomy of Algiers (Algeria).

Dr. Ibrahim Al-Jboory, President of the Arab Association for Plant Protection, met during his visit to Algeria on Sunday (January 20th) Prof. Lakhdar Khelifi, Director of the National Higher School of Agronomy in Algeria and its professors. Among the professors who were present Abdelaziz Keddad, Zouaoui Bouznad, Bahia Doumandji, Meriem Louanchi, Hassan Abdelkrim and Houda Boureghda (executive member of the society) and elite of professors working in the school. After the welcome, the President of the Arab Society for Plant Protection gave an idea about the society and the date of its establishment and scientific activities in the various Arab countries. He also highlights the role of the Algerian elites in supporting the association through the active and distinctive participation in the previous congresses of the Society. The school director was very pleased with what he heard about the society and its role in consolidating the scientific and academic rule in the Arab world. The idea of convening the 14th Arab Congress for Plant Protection in Algeria was raised in 2023 and received a positive welcome from the President of the Arab Society for Plant Protection and all the attendees. Al-Jboory visited the Central Library of the National School, where the library staff explained the way the library works and they have presented the scientific journals and references contained in the library of the school and the archives of the library of rare old books dating back to 1800.

The second stage of the visit was the Department of Zoology where he visited the library and the laboratories. Then he passed to the Department of Botany where he visited the herbarium and the library of the department and the bacteriology and mycology laboratories. Al-Jboory held discussions with teachers and master students on their research topics. He also entered the classrooms and greeted the students with a lot of spontaneity.

FIRST ANNOUNCEMENT- 13th Arab Congress of Plant Protection

The Arab Society for Plant Protection and the Organizing Committee of the 13th Arab Congress of Plant Protection, which will be held during the period 1-6 November, 2020 in Hammamet, Tunisia under the theme: "Plant Health for a Secure and Safe Food" are glad to announce launching today the congress website <https://www.acpp-aspp.com> Few dedicated members of the society, with society membership reached over 1000, completed this work in two languages Arabic and English to make the information available to a wide audience. Interested individuals can start registering for participation as of today. This congress, held once every three years, is considered for decades the most important scientific gathering in the Arab region. The congress Organizing Committee made a serious effort to provide participants reasonable low prices for accommodations whether in the congress venue, which is Le Royal Hotel, or in other neighboring hotels.





13th Arab Congress of Plant Protection, Hotel Le Royal, Hammamet, Tunisia, 1-6 November 2020

"Plant Health for Secure and Safe Food"

Organized by
Arab Society for Plant Protection
ACPP2020

www.acpp-aspp.com

In collaboration with Ministry of Agriculture and Water Resources and Fisheries in Tunisia represented
by National Agricultural Research Institute of Tunisia
First Announcement

Welcome to Green Tunisia



Invitation to join

The Arab Society for Plant Protection (ASPP) in collaboration with the Tunisian Ministry of Agriculture and Water Resources and Fisheries represented by the National Agricultural Institute of Tunisia (INRAT) are honored in inviting researchers and scientists interested in plant protection scientists working in public institutions or in the private sector, whether in Ministries, Universities, research centers and local or international organizations to present their recent findings and exchange knowledge and expertise in all aspects of protecting plants from the attack of different pests of common interest, with special emphasis on new developments in adopting environment friendly integrated pest management strategies.

Congress Themes

1. Insects, mites and rodents economic pests
2. Plant diseases and their control
3. Ecology and epidemiology of plant diseases
4. Natural enemies and their role in pest control
5. Weeds and their control
6. Pesticides
 - Biopesticides and food chain
 - Compatibility between biopesticides and biological control components
 - Safe use of Agricultural chemicals
7. Postharvest pests

8. Quarantine and phytosanitary measures
9. Integrated pest management
10. Genetic engineering and pest control
11. Beneficiary insects (bees and silk worm)

Congress Committees

Honorary Committee

- Minister of Agriculture, Water Resources and Fisheries of Tunisia.
- Pr. Elies Hamza, President of the Higher Agricultural Research & Education Institution, Tunisia.
- Pr. Hichem Ben Salem, DG of the Higher Agricultural Research & Education Institution, Tunisia.
- Pr. Ben Jamaa Mohamed Lahabib, General Director of Plant Health and Control of Agricultural inputs.
- Pr. Mondher Ben Salem, DG of the National Institute of Agricultural Research, Tunisia
- Dr. Anis Ben Rayana, Director of the International Cooperation, Ministry of Agriculture, Tunisia.
- Dr. Ibrahim Al-Jboory, President of the Arab Society for Plant Protection, Iraq.
- Pr. Bouzid Nasraoui, Vice President of the Arab Society for Plant Protection, Tunisia.

Organizing Committee

| | | |
|-----------------------------------|------------------------------------|----------------------------|
| Asma Najar (Chairperson), Tunisia | Ben Jamaa Mohamed Lahabib, Tunisia | Mondher Ben Salem, Tunisia |
| Sonia Bouhachem, Tunisia | Noura Omri, Tunisia | Bechir Allagui, Tunisia |
| Naima Mahfoudhi, Tunisia | Ikbale Chaieb, Tunisia | Hajer Ben Ghanem, Tunisia |
| Thouraya Souissi, Tunisia | Mejda Daami, Tunisia | Riad Gabsi, Tunisia |
| Kaouthar Lebdi Grissa, Tunisia | Anis Ben Rayana, Tunisia | |

Scientific Committee

Mejda Daami (Coordinator), Tunisia

Insects and Integrated Management

| | | |
|------------------------------------|----------------------------|--------------------------------------|
| Sonia Bouhachem, Tunisia | Ibtissem Fekih, Tunisia | Jouda Madiouni, Tunisia |
| Ikbale Chaieb, Tunisia | Olfa Bachrouch, Tunisia | Sinda Boulehya, Tunisia |
| Ben Jamaa Mohamed Lahabib, Tunisia | | Asma Laarif, Tunisia Mohamed Braham, |
| Tunisia | | |
| Ahmed Al-Houneidi, Egypt | Abdelsattar Aref Ali, Iraq | Saadiah Lahlioui, Morocco |
| Ahmad Katbeh, Jordan | Salem Al-Khatery, Oman | Abdulrahman Daoud, Saudi Arabia |

Mites

| | | |
|--------------------------------|-----------------------|-------------------------|
| Kaouthar Lebdi Grissa, Tunisia | Habiba Glida, Tunisia | Ibrahim Al-Jboory, Iraq |
|--------------------------------|-----------------------|-------------------------|

Fungal and Bacterial Diseases

| | | |
|-----------------------------|----------------------------|---------------------------|
| Bouzid Nasraoui, Tunisia | Azza Rhaïem, Tunisia | Noura Omri, Tunisia |
| Bechir Allagui, Tunisia | Amira Mougou, Tunisia | Samia Gargouri, Tunisia |
| Mejda Daami, Tunisia | Mohamed Ali Triki, Tunisia | Naima Boughalleb, Tunisia |
| Bohra El Bahri, Tunisia | Sihem Ben Maachia, Tunisia | Wafaa Rouissi, Tunisia, |
| Bassam Bayaa, Syria | Emad Maarouf, Iraq | Houda Bouragda, Algeria |
| Abdelhamid Ramdani, Morocco | | |

Viral diseases

| | | |
|-------------------------|--------------------------|------------------------|
| Asma Najar, Tunisia | Naima Mahfoudhi, Tunisia | Imen Hamdi, Tunisia |
| Khaled Makkouk, Lebanon | Safaa Kumari, Syria | Elia Choueiri, Lebanon |
| Thaer Yassen, Italy | Khaled Djelouah, Italy | Raed Abou Kubaa, Syria |

Nematode

| | | |
|------------------------|----------------------------|---------------------|
| Najat Raouani, Tunisia | Sadreddine Kallel, Tunisia | Ahmed Dawaba, Egypt |
|------------------------|----------------------------|---------------------|

Weed Control

| | | |
|---------------------------|-------------------------|---------------------------|
| Thouraya Souissi, Tunisia | Hanen Chaabene, Tunisia | Barakat Abu Rmila, Jordan |
| Mustapha Haidar, Lebanon | Najia Zorman, Algeria | |

Pesticides

Mounir Mekki, Tunisia

M. El-Said El-Zemaity, Egypt

Genetic Engineering & Pest Control

Ahmed Jemmali, Tunisia

Karim Ammar, Tunisia

Mohamed Kharrat, Tunisia

Hossam Farag, Egypt

Hajer Ben Ghanem, Tunisia

Aladdin Hamwieh, Syria

Local logistics Committee

Hajer Ben Ghanem (Coordinator), Tunisia

Radhia Omar, Tunisia

Hafedh Khlif, Tunisia

Nadia Chammem, Tunisia

Manal Al Air, Tunisia

Wafaa Rouissi, Tunisia

Samia Mghandef, Tunisia

Communication and Information Committee

Sonia Bouhachem (Coordinator), Tunisia

Noura Omri, Tunisia

Ikbal Chaieb, Tunisia

Samia Gargouri, Tunisia

Haifa Khaiereddine, Tunisia

Finance Committee

Riadh Gabssi, President of the Seed and Plant Syndical Chamber (Coordinator), Tunisia

Adel Ghariani, General Manager of COTUGRAIN, Tunisia

Hishem Aounallah, General Manager, BIOPROTECTION, Tunisia

Nacer Chouikh, General Manager, AGRONOMIC LAND, Tunisia

Mehrez Chebil, President of the Tunisian Society of Plant Protection, Tunisia

Mokhtar Mechichi, Technical Director of Mabrouka Company, Tunisia

Asma Najjar, National Institute of Agricultural Research, Tunisia

General Congress Program

The general congress program includes the following:

| | |
|-------------------------------|---|
| Sunday November 1, 2020 | <ul style="list-style-type: none">• Arrival and registration |
| Monday November 2, 2020 | <ul style="list-style-type: none">• Registration, opening session and a symposium in the morning and two oral concurrent sessions in the afternoon.• First poster session |
| Tuesday November 3, 2020 | <ul style="list-style-type: none">• A symposium and two oral concurrent sessions in the morning and two oral concurrent sessions in the afternoon, followed by the ASPP general assembly meeting in the evening.• First poster session |
| Wednesday November 4, 2020 | <ul style="list-style-type: none">• Field trip |
| Thursday November 5, 2020 | <ul style="list-style-type: none">• A symposium and two oral concurrent sessions in the morning and two oral concurrent sessions in the afternoon, followed by new ASPP Executive Committee election and gala dinner in the evening• Second poster session |
| Friday November 6, 2020 | <ul style="list-style-type: none">• A symposium and two oral concurrent sessions in the morning and two oral concurrent sessions in the afternoon.• Second poster session |

Congress language

Arabic (official language), English (symposia sessions)

Registration fees (do not include hotel accommodations)

| Type of participation | Participants from Tunisia (Tunisian Dinar) | Participants from outside Tunisia (US Dollars) |
|------------------------------------|---|--|
| Regular (with or without abstract) | 300 | 200 |
| Graduate students | 200 | 150 |
| Accompanying persons | 150 | 100 |

- Registration fees cover congress participation, congress printed materials, lunches, coffee/tea breaks, field trip and registration fees for three years in the Arab Society for Plant Protection.
- Graduate students should provide a certificate from credible education institutions confirming their status.
- Fees of accompanying persons cover the field trip and the gala dinner.

Correspondence

13th Arab Congress of Plant Protection Secretariat (ACPP 2020)

Email: info@acpp-aspp.com

Mobile/WhatsApp: 00216-58461273

Congress website: www.acpp-aspp.com

Important dates

- | | |
|--|---------------------------|
| ✓ Last date for registration | September 1, 2020 |
| ✓ Last date for abstract submission | March 1, 2020 |
| ✓ Sending abstracts approval letters | May 1, 2020 |
| ✓ Last date for hotel booking | September 30, 2020 |
| ✓ Deadline for submission of proposals for invited research sessions | December 31, 2019 |

Registration Form

13th Arab Congress of Plant Protection (ACPP2020) Le Royal Hotel, Hammamet, Tunisia 1-6 November 2020 www.acpp-aspp.com

In order to receive all information related to the congress, participants are encouraged to send their completed registration form to the congress secretariat soonest (info@acpp-aspp.com)

| | |
|---------------------------------|---|
| Title* | First name* |
| Second Name | Family Name* |
| Date and place of birth* | Gender * |
| Country* | Address* |
| Mobile Number * | Phone Number * |
| Email* | Type of Participation* Oral --- Poster --- Attendance----- |
| Field of Research* | Accompanying Persons * |

***Required Fields**

Information related to entry visa to Tunisia, Abstracts, hotel accommodations and other information related to the congress will be available in the second announcement

Downy Mildew on Oilseed Brassicas – Understanding the Drivers of Disease Epidemics and Potential of Novel Host Resistances.

In August 28, 2018, **Akeel Emad Mohammed (Iraq)** has completed all the requirements of his study and awarded a PhD in Plant Pathology/Fungi from The University of Western Australia (UWA). His research is the first to determine the expression of pathotype-independent host resistances across an extensive set of canola varieties and diverse *Brassicaceae* to *Hyaloperonospora brassicae* isolates in Australia were highly resistant varieties identified. Downy mildew disease caused by (*Hyaloperonospora brassicae* syn. *H. parasitica*) is a major disease limitation to oilseed *Brassica* production (particularly rapeseed, canola, mustard) worldwide and also causes significant damage in vegetable *Brassica* crops. Infection can be high as 100% on some *Brassica* crops especially in the early seedling stage. Screening for the host resistance to *H. brassicae* of 131 *Brassicaceae* varieties at the cotyledon stage, including 109 Australian canola varieties (*Brassica napus* and *B. juncea*) and 22 diverse *Brassicaceae* (including *B. napus*, *B. carinata*, *B. juncea*, *B. nigra*, *B. rapa*, *Crambe abyssinica* and *Raphanus sativus*) highlighted new excellent resistance to downy mildew. Using a mixture of 10 *H. brassicae* isolates collected from southern Australia areas severely affected by downy mildew disease in 2015, new high level resistances were identified across *R. sativus*, *B. carinata*, *B. napus*, *B. juncea* and *C. abyssinica*. Cluster analysis revealed six distinct clusters (highly resistant, resistant, moderately resistant, moderately susceptible, susceptible, and very susceptible) based on disease index (%DI) values, and this opens the way for breeders having to only select a single genotype from within each of the clusters determined as highly resistant or resistant in developing new resistant commercial varieties. This is the first study to demonstrate the existence of these very high levels of pathotype-independent resistance to *H. brassicae*, particularly in Australian canola varieties. The above studies were followed up with additional search for further new sources of resistance to *H. brassicae*, but this time across more diverse *Brassicaceae* including 78 *B. napus*, 38 *B. carinata*, 25 *B. juncea* and 13 miscellaneous *Brassicaceae* including (three of *Raphanus sativus*, two of each of *Rapistrum rugosum*, *B. incana* and one each of *C. abyssinica*, *B. fruticulosa*, *Hirschfeldia incana*, *B. insularis*, *B. oleracea* and *Sinapis arvensis*. Further new sources of effective resistance were identified to *H. brassicae* among these, particularly in *R. sativus*; *B. carinata*, *B. juncea* *B. carinata*, *B. incana* and *C. abyssinica*. To examine the role of environmental factors on the development of downy mildew epidemics, the effects of temperature (14/10°C and 22/17°C day/night) and plant age (15, 23, 31 and 40 day-old-plants) on the severity of downy mildew on *B. juncea* and *B. napus* varieties were determined. There were significant effects of temperature, plant age and their interaction, with more severe disease under warmer conditions and on very young seedlings. Findings explain the recent increase in severe disease epidemics in canola as seasonal temperatures increase and why most severe epidemics are on youngest plants. *H. brassicae* isolates collected 2006-2008, and more recently, were inoculated onto cotyledons of 28 diverse *Brassicaceae* genotypes to identify and select suitable *Brassica* spp. differentials to enable characterisation of *H. brassicae* pathotypes and to define phylogenetic relationships among isolates across Australia. Using octal classification, the six *Brassicaceae* host genotypes most suitable as host differentials to characterise pathotypes of *H. brassicae* were identified and then used to define eight distinct pathotypes occurring in Australia. Phylogenetic relationships, determined across 20 *H. brassicae* isolates collected in 2006-2008 and 88 isolates collected in 2015-2016, highlighted seven distinct clades. These are the first studies to define the phylogenetic relationships and pathotype structure among *H. brassicae* isolates in Australia and set a benchmark for understanding current and future genetic and phenotypic pathotype shifts within pathogen populations. {**Akeel E Mohammed (Iraq)** Supervised by: Prof/ Martin Barbetti and Mingpei You, (Doctorate, 2019)]. ([Iraq-Australia](#))



During the period of his study (February 2015 – August 2018) Dr. Akeel Mohammed participated in different international conferences of plant pathology {Australasian Plant Pathology Society Conference 2015, Fremantle, Australia, International Congress of Plant Pathology 2018 (ICPP2018) Boston, United States and 20th Australian

Research Assembly on Brassicas, Perth, Australia (AusCanola 2018)) and published some scientific papers as follows:

- **Mohammed AE**, You MP, Barbetti MJ, 2017. New resistances offer opportunity for effective management of the downy mildew (*Hyaloperonospora parasitica*) threat to canola. *Crop and Pasture Science* **68**, 234–242.
- **Mohammed AE**, You MP, Barbetti MJ, 2018. Temperature and plant age drive downy mildew disease epidemics on oilseed *Brassica napus* and *B. juncea*. *European Journal of Plant Pathology*. **151**, 703–711.
- **Mohammed AE**, You MP, Barbetti MJ, 2018. Pathotypes and phylogenetic variation determine downy mildew epidemics in *Brassica* spp. in Australia. *Plant Pathology*. **67**, 1514–1527.
- **Mohammed AE**, You MP, Banga SS, Barbetti MJ, 2019. Resistances to downy mildew (*Hyaloperonospora brassicae*) in diverse *Brassicaceae* offer new disease management opportunities for oilseed and vegetable crucifer industries. *European Journal of Plant Pathology*. **153**, 67–81.

Biotype Composition and Virulence Distribution of Wheat Curl Mite in the North Central United States.

The wheat curl mite, *Aceria tosichella* (Keifer), is an important global pest of bread wheat, *Triticum aestivum* L. Chronic and often severe reductions of winter wheat yield due to *A. tosichella* infestations have occurred in North America and all other wheat-production areas for over five decades. Moreover, *A. tosichella* is the only vector which transmits the three most important wheat viruses in the Great Plains, which are Wheat Streak Mosaic Virus (WSMV), the most economically important wheat virus in North America; Triticum Mosaic Virus (TriMV) and High Plains Wheat Mosaic Virus (HPWMoV). Mite infestation alone causes stunted, chlorotic plants in susceptible wheat varieties. To date, mite resistant wheat cultivars have been the only sufficient method to control *A. tosichella*. The discovery of new genes for *A. tosichella* resistance and their introgression into wheat cultivars are essential steps to combat the development of new and/or different *A. tosichella* biotypes which can develop to overcome resistance genes. Both *A. tosichella* biotype 1 and 2 exist in U. S. Great Plains wheat producing areas. Elucidating and predicting *A. tosichella* population composition changes based on climatic and geographic variables is a key to continued effective mite management. Experiments were conducted to: 1) assess *A. tosichella* virulence in mites collected from 25 sample sites in six states to wheat plants harboring the *Cmc2*, *Cmc3* and *Cmc4* mite resistance genes and the *Wsm2* WSMV resistance gene in 2014 and 2015, and determine the distribution of WSMV, TriMV and HPWMoV present in mites collected; 2) assess *A. tosichella* biotype composition using internal transcribed spacer 1 (ITS1) and cytochrome oxidase I (COI) polymorphisms; 3) use generalized additive modeling to capture the spatio-temporal factors contributing to the prevalence of *A. tosichella* biotypes 1 and 2; and 4) screen Kansas advanced breeding lines for resistance to *A. tosichella* biotypes 1 and 2. Results indicated that *A. tosichella* collected from 92% of the sample area were virulent to susceptible Jagger wheat plants with no *Cmc* resistance genes; that mites from 36% of the sample area were virulent to the *Cmc2* gene, and that mites collected from 24% of sample area were virulent to *Cmc3*. Mite populations from only 8% of the sample sites exhibited virulence to plants containing *Cmc4* + *Wsm2* or *Cmc4*. The WSMV virus was predominant and present in 76% of all mites sampled. HPWMoV and TriMV were less apparent and present in 16% and 8% of all mites sampled, respectively. These results will enable breeders to increase the efficiency of wheat production by releasing wheat varieties containing *A. tosichella* resistance genes that contribute to reducing virus transmission. Results of spatio-temporal factor modeling provide new, more accurate information about the use of ground-cover and precipitation as key predictors of biotype prevalence and ratio. Experiments to determine if Kansas State University advanced breeding lines contain *A. tosichella* resistance found no resistance to biotype 1, resistance to biotype 2 in breeding lines AYN3-37 and AYN3-34; and moderate resistance to biotype 2 in breeding lines AYN2-28 and AYN2-36. The demonstrated correlation between reduced *A. tosichella* population size and avirulence; characterization and prediction of the *A. tosichella* biotype composition; and the identification of new sources of *A. tosichella* resistance in wheat can help entomologists and wheat breeders increase wheat production efficiency by releasing additional wheat cultivars containing *A. tosichella* resistance genes. [Luay Kahtan Khalaf PhD Dissertation, Kansas State University, Manhattan, Kansas USA, 2018, Major Professor, C. Michael Smith 2019]. ([Iraq-USA](#))



First Molecular Identification and Characterization of *Spiroplasma citri*, the Causal Agent of Citrus Stubborn Disease in Algerian Citrus Groves.

Citrus is one of the most popular fruit crops cultivated in Algeria. The major citrus production regions is situated in the Mitidja area in the Northern part of the country. In order to assess the presence of *Spiroplasma citri*, the causal agent of citrus stubborn disease, a field survey was carried out during the summer on two citrus varietal collections located in the Mitidja, the main citrus growing area. Among the 112 collected samples, two infected trees were identified by molecular techniques in both varietal collections using specific primers SC1-fw (5'ATTTTCAATTTGATGTTTATCAAGAC AAC3') and SC1-rev (5'CAAAATCACTTGC TCCTGCAT TTGG3') (Saillard C., not published). The partial Spiralin gene nucleotide sequence retrieved from the Algerian isolate (GenBank accession No. LN713947.1), revealed a high percentage of nucleotide homology (99%) with the Iranian Fasa I strain isolated from a leafhopper vector (FJ755921.1) (Khanchezar et al. 2014). Interestingly, the Algerian isolate also reacted positively with the primer pairs targeting the TraG gene (Breton et al. 2010) which is essential for insect transmission and predicts a natural diffusion of the pathogen in case of the presence of insect vectors *Circulifer haematoceps* in the infected area. The obtained sequence (LN908966) revealed 97% nucleotide homology with *Spiroplasma citri* plasmid pSci6 from the Moroccan strain GII3. *S. citri* was previously reported in Algeria by Vignault et al. (1980) by isolation from plant material showing symptoms of the disease but no other investigations were carried out afterwards. To our knowledge, this is the first molecular identification and characterization of *S. citri* in the country. [Mounira Inas Draï, Raïed Abou Kubaa, Chahinez Ghezli, Leonardo Varvaro, Khaled Djelouah, CIHEAM - Istituto Agronomico Mediterraneo di Bari, Via Ceglie 9, 70010 Valenzano (BA), Italy, *Journal of Plant Pathology*, 2019].

<https://doi.org/10.1007/s42161-019-00252-3> (Algeria-Italy)

Effect of Kombucha on Gut-microbiota in Mouse having non-alcoholic Fatty Liver Disease.

Non-alcoholic fatty liver disease (NAFLD) is one of the most common liver disorders. Possible links have been recently found between the gut-microbiota and the host metabolism in development of NAFLD and obesity. Therefore, understanding the changes in intestinal microbiota during the progression of NAFLD, is important. In this study, the effect of Kombucha tea (KT), obtained by microbial fermentation of sugared black tea, was investigated on gut-microbiota during the progression of NAFLD. The results indicated a decrease in *Erysipelotrichia* class by treatment with KT in comparison to the methionine/choline-deficient (MCD)-fed db/db mice. *Allobaculum*, *Turicibacter*, and *Clostridium* genera, were only detected in MCD-fed db/db mice and were decreased after treatment with KT, whereas *Lactobacillus* was more abundant in MCD + KT-fed mice than in MCD only-fed mice and *Mucispirillum*, was found only in the MCD + KT-fed mice group. Our results demonstrated that the change of intestinal microbiota was influenced by KT intake, contributing to combat NAFLD. [Jung, Y., Kim, I., Mannaa, M., Kim, J., Wang, S., Park, I., Kim, J. and Seo, Y.S., *Food science and biotechnology*, 28(1), pp.261-267, 2019]. (Egypt-Korea)

Genomic Features and Insights into the Taxonomy, Virulence, and Benevolence of Plant-Associated *Burkholderia* Species.

The members of the *Burkholderia* genus are characterized by high versatility and adaptability to various ecological niches. With the availability of the genome sequences of numerous species of *Burkholderia*, many studies have been conducted to elucidate the unique features of this exceptional group of bacteria. Genomic and metabolic plasticity are common among *Burkholderia* species, as evidenced by their relatively large multi-replicon genomes that are rich in insertion sequences and genomic islands and contain a high proportion of coding regions. Such unique features could explain their adaptability to various habitats and their versatile lifestyles, which are reflected in a multiplicity of species including free-living rhizospheric bacteria, plant endosymbionts, legume nodulators, and plant pathogens. The phytopathogenic *Burkholderia* group encompasses several pathogens representing threats to important agriculture crops such as rice. Contrarily, plant-beneficial *Burkholderia* have also been reported, which have symbiotic and growth-promoting roles. In this review, the taxonomy of *Burkholderia* is discussed emphasizing the recent updates and the contributions of genomic studies to precise taxonomic positioning. Moreover, genomic and functional studies on *Burkholderia* are reviewed and insights are provided into the mechanisms underlying the virulence and benevolence of phytopathogenic and plant-beneficial *Burkholderia*, respectively, on the basis of cutting-edge knowledge. [Mannaa, M., Park, I. and Seo, Y.S., 2019. *Genomic Features and Insights into the Taxonomy, Virulence, and Benevolence of Plant-Associated Burkholderia Species*. *International journal of molecular sciences*, 20(1), p.121, 2019]. (Egypt-Korea)

Pore-Scale Monitoring of the Effect of Microarchitecture on Fungal Growth in a Two-Dimensional Soil-Like Micromodel.

In spite of the very significant role that fungi are called to play in agricultural production and climate change over the next two decades, very little is known at this point about the parameters that control the spread of fungal hyphae in the pore space of soils. Monitoring of this process in 3 dimensions is not technically feasible at the moment. The use of transparent micromodels simulating the internal geometry of real soils affords an opportunity to approach the problem in 2 dimensions, provided it is confirmed that fungi would actually want to propagate in such artificial systems. In this context, the key objectives of the research described in this article are to ascertain, first, that the fungus *Rhizoctonia solani* can indeed grow in a micromodel of a sandy loam soil, and, second, to identify and analyze in detail the pattern by which it spreads in the tortuous pores of the micromodel. Experimental observations show that hyphae penetrate easily inside the micromodel, where they bend frequently to adapt to the confinement to which they are subjected, and branch at irregular intervals, unlike in current computer models of the growth of hyphae, which tend to describe them as series of straight tubular segments. A portion of the time, hyphae in the micromodels also exhibit thigmotropism, i.e., tend to follow solid surfaces closely. Sub-apical branching, which in unconfined situations seems to be controlled by the fungus, appears to be closely connected with the bending of the hyphae, resulting from their interactions with surfaces. These different observations not only indicate different directions to follow to modify current mesoscopic models of fungal growth, so they can apply to soils, but they also suggest a wealth of further experiments using the same set-up, involving for example competing fungal hyphae, or the coexistence of fungi and bacteria in the same pore space. [Raghad Soufan, Yolaine Delaunay, Laure Vieubl  Gonod, Leslie M. Shor, Patricia Garnier, Wilfred Otten and Philippe C. Baveye, *Frontiers in Environmental Science*, Volume 6, Article 68, 2018]. ([Syria-France](#))

Development of New Tools for on-Site Detection of *Spiroplasma citri*

Dr. Mounira Inas Drais, post-doctoral fellow at Tuscia University, Viterbo, Italy (Ciheam-Bari former student from Algeria) participated to the Joint Conference of the 21st International Organization of Citrus Virologists (IOCV) and the 6th International Research Conference on Huanglongbing (IRCHLB) that was held from March 10-15, 2019 at the Riverside Convention Center in Riverside, California, USA. Around 220 participants attended the IOCV meeting and almost 600 participants attended the IRCHLB meeting from 23 countries. Inas was awarded the financial support for young scientists from the organizers to participate to the conference. She presented a poster entitled 'Development of new tools for on-site detection of *Spiroplasma citri*, causal agent of citrus stubborn disease.' [Mounira Drais Ines, 2019]. ([Algeria-USA](#))



Redescription of *Agistemus lobatus* Ehara, 1964 and *A. terminalis* (Quayle, 1912) (Acari: Trombidiformes: Stigmaeidae) with DNA barcoding.

Agistemus lobatus Ehara, 1964 and *A. terminalis* (Quayle, 1912) (Stigmaeidae) are cosmopolitan predatory mites and appear on various plants in Japan. They are so close morphologically and can be mainly separated based on the lengths of dorsal setae sci and c2. The present study aimed to redescribe these two species for detailed morphological variations and generate sequences of partial mitochondrial cytochrome c oxidase subunit I (COI) as DNA barcode data. Our results with DNA barcoding and morphology well separated *A. lobatus* from the close species *A. terminalis*. [Mohamed W. Negm and Tetsuo Gotoh, *Systematic & Applied Acarology* 24(1): 33–44, 2019]. ([Egypt-Japan](#)).

Mahran Zeity, M. Sc. & Ph. D., Department of Agricultur Entomology, University of Agricultural Sciences, Bangalore, India.

I started my scientific career in the field of Acari through the faunal study of Acari associated with different host plants during master degree. Later, I selected to study fauna of red spider mites, Tetranychidae using the morphological characters in addition to the molecular biology that have showed as useful tool in the field of classification and systematic. I used them to verify the taxonomic status of two species of red spider mites and consider the recent one is the synonym of the prior one. During my studies in India, I described three new species, recording 14 species of red spider mite for the first time from India and re-describing one. Upon my return from India in 2015, I joined my previous position, at the Agricultural Research Center in Latakia of the General Commission for Scientific Agricultural Research. I started research with the fauna of mite species associated with apple trees and summer vegetables in order to achieve a vision on the preparation of a clear view of the diversity, distribution of Acari fauna associated with crops, fruit trees, as well as forestry and herbs. This aspect of research (survey and identification of Acari) has suffered until the recent past a lot of neglect. This vision requires in the next stage, to draw the lines of research that can be carried out in the light of the data collected during the first stage. During the past three years two articles have been published, while two articles have to be published shortly in collaboration with some colleagues around the world, all of which include 13 new species of tetranychids species and one insect species as new records from Syria. [Mahran Zeity, PhD, General Commission for Scientific Agricultural Research, Damascus, Syria].



Published and under publishing articles:

Zeity M. & Chinnamade Gowda C. (2013) A new species of *Neophyllobius* Berlese (Acari: Camerobiidae) from India. *International Journal of Acarology*. 39 (7), 547-550. <http://dx.doi.org/10.1080/01647954.2013.844726>

Zeity M., Nagappa S, & Chinnamade Gowda C. (2016) New records of spider mites and description of male of *Stylophoronychus baghensis* Prasad (Acari: Tetranychidae) from India. , *Oriental Insects*. 50 (3), 119-128. <http://dx.doi.org/10.1080/00305316.2016.1194777>

Zeity M., Nagappa S, & Chinnamade Gowda C. (2016) New species, new records and re-description of spider mites (Acari: Tetranychidae) from India, *Zootaxa*. 4085 (3), 416-430. <http://doi.org/10.11646/zootaxa.4085.3.5>

Zeity M., Nagappa S, & Chinnamade Gowda C. (2017) are *Tetranychus macfarlanei* Baker & Pritchard and *Tetranychus malaysiensis* Ehara one species? Morphological and molecular evidences for synonymy between these two spider mite species and a note on invasiveness of *T. macfarlanei* on okra and eggplant in India. *Systematic & Applied Acarology*. 22(4): 467–476. <http://doi.org/10.11158/saa.22.4.3>

Zeity M. (2017) Some new records of spider mites (Acari, Tetranychidae) from Syria, , *Acarologia*, 57(3), 651-654. <http://doi.org/10.24349/acarologia/20174184>

Zeity M. (2018) First record of bay sucker *Trioza alacris* Flor (Triozidae, Hemiptera) in Syria. *Bulletin OEPP/EPPO Bulletin*, 48 (3), 586–588. <http://doi.org/10.1111/epp.12546>.

Zeity M. & Negm M. W. (2019) *Eutetranychus palmatus* Attiah, 1967 (Acari: Tetranychidae), a newly recorded spider mite pest of date palm from Syria. *Persian Journal of Acarology*, 8(2), 111-114.

Zeity M. & Srinivasa N. (2019) Updated contribution to the knowledge of Tetranychoida (Acari: Tetranychidae, Tenuipalpidae) from Syria with reinstatement of genus *Nuciforaella* Vacante, *Systematic & Applied Acarology*, *Systematic & Applied Acarology* 24(4): 529–543 (2019). <http://doi.org/10.11158/saa.24.4.1>

Ayoub Maachi from Morocco to Brazil.

Brazil, a developing country with a great potential, was ranked 3rd in the number of manuscripts published in agricultural sciences in 2017 after USA and China (<https://www.scimagojr.com/countryrank.php?area=1100&year=2017>).

A great achievement for a country which is able to compete even developed countries in agricultural sciences. The research conditions are more or less similar to the ones in Arabic countries but their higher ambition made them able to counter their problems and progress well in science. The state launched a program named “science without barriers”, which enables Brazilian students to pursue their Master and Doctorate degree in well ranked universities worldwide, giving them access to higher education quality. This kind of programs helped with the transfer of knowledge and technologies to Brazil. In addition, the state provides funds for good researchers to pursue their research and to develop good projects. These conditions made me enthusiastic to visit Brazil and to spend few months in a unit of research in a laboratory of virology in order to improve my skills with plant viruses, and my main mission as well is to learn: how with similar conditions to Arabic country, Brazil was able to make a big difference in the research output mainly in agriculture. I hope also to be able to transfer these keys of success to Morocco. [Ayoub Maachi, Universidade de Brasilia, the Institute of Biological Science, laboratory of Virology 2019] ([Morocco-Brazil](#))



Youssef Khamis Youssef Ahmed from Egypt to Brazil

Dr. Youssef Khamis Youssef Ahmed, who works at Plant Pathology Research Institute - Agricultural Research Center (ARC), Egypt, is visiting Brazil for a research mission at Londrina University in Parana, Brazil. The scientific mission of Ahmed is focusing on finding safe and environmentally friendly alternatives to control gray mold, which is considered one of the most important grape diseases worldwide. Dr. Ahmed is investigating also the mechanism of action of these alternatives and trying to understand how they act against *Botrytis cinerea*, as well as whether they act as elements of natural host resistance in grape berries. [Youssef Khamis Ahmed, Londrina University, Parana, Brazil 2019]. ([Egypt-Brazil](#))



XYLELLA NEWS

Xylella fastidiosa, detected for the first time in Europe in Apulia the October of 2013, is one of the most concerning quarantine pathogens worldwide. It is a xylem-limited bacterium, transmitted by xylem fluid feeding sap insects such as *Philaenus spumarius*. Its pathogenicity occurs when a large proportion of xylem vessels are colonized, resulting in a quick and generalized decline of the plant, and in the worst cases the death of the plant. Due to the fact that measures used to avoid introduction and spreading of this pathogen in Europe have been inefficient, nowadays it is necessary to develop direct control strategies over *Xylella fastidiosa*. Considering the requirements of the European regulation regarding phytosanitary products, functional peptides appear as a promising alternative due to its known antimicrobial and plant elicitor activity. The group of Plant Pathology from the University of Girona (Spain), in collaboration with the Institute for Sustainable Plant Protection (Bari unit) from the National Research Council of Italy, are currently working on the evaluation of functional peptides efficiency in the control of *Xylella fastidiosa* subsp. *pauca* strain De Donno in different plant species, such as olive and periwinkle. [Aina Baró Sabé, PhD student from the University of Girona, 2019]



The Moroccan student El Hatib Oumaima is finishing up her master's degree on the implementation of diagnostic tools for the detection of *Xylella fastidiosa*, in the framework of a collaborative research between the CIHEAM IAMB and the CNR of Bari. The study includes the validation of the automated platform developed by **Promega** (USA) for DNA extraction and purification, the implementation of sampling procedures for testing composite samples for *Xylella fastidiosa* and finally the validation of high resolution melting (HRM) analysis approach to rapidly assign Xf genotypes to a subspecies cluster. **[Oumaima El Hatib, (Msc student, 2019), Morocco].**



***Xylella fastidiosa*: Pest Risk Indicators and Economic Impacts.**

X. fastidiosa, has a worldwide distribution (North America, Central America and Caribbean, Asia and Europe), and a wide range of plant-hosts, over than 500 species (EFSA, 2018). In Europe, an outbreak of *X. fastidiosa* (ST53) has been first recorded in the Apulia region of Italy (EPPO, 2013) on olive trees where *Philaenus spumarius* is the insect-vector of this bacterium (Saponari et al., 2014). The pathogen has then spread to France (Corsica, Alpes region) and Spain (Balearic Islands, Alicante). DNA analysis shows that the genome sequence of CodiRo strain (ST 53) is almost exactly as the subspecies that infect *Nerium oleander* in Costa Rica (Martelliet al., 2014). However, the importation of plants for plant material from Central America to Italy may constitute the major pathway of the introduction of this pathogen, where the bacterium has found the ideal agro-climatic conditions to survive during the last 20 years. Also, the importation of plants for planting from infected countries, source of *Xylella spp.*, to Lebanon, will lead to a potential entry, establishment and spread of this threat in its territory. Given the vital role played by olives sector in Italy and some vulnerable crops in Lebanon and other arab countries (i.e. olives, grapes) as sources of livelihood for many stakeholders, it is essential to understand the risk indicators of the entry, establishment and spread of *Xylella* in non-observed countries, as well as its real or potential economic impact on the livelihood of the concerned stakeholders in these countries. In addition, researches based on economic principles are crucial in advising policy makers on the efficiency of resource use for disease management. In this context, losses due to any plant disease may be structured as losses in production (direct losses), expenditure and lost revenue (indirect losses). However, there is; **a)** no data on the risk indicators ranking in the world, **b)** very little data on the economic impact of *X. fastidiosa* in Italy and, **c)** lack of information on the potential economic impact and the costs of surveillance, control and prevention if *X. fastidiosa* will be established in any non-reported country, such as Lebanon. Given that, more data are required and more careful analysis is needed to describe better the assessment for *X. fastidiosa*. The doctoral research work focuses on the treatment of the following objectives as follows: **a)** conduct a horizon scanning (i.e. risk indicators model) of the entry, establishment and spread of *X. fastidiosa* in not reported countries (EU & MENA regions), **b)** estimate the impacts in term of private financial losses incurred by olive farmers as well public losses with damages on landscape as a result of *X. fastidiosa* epidemic in Puglia; and **c)** simulate the potential economic impact of *X. fastidiosa*, if established and spread, in Lebanon. The horizon scanning will lead to rank the risk of *X. fastidiosa* among non-reported countries in EU and MENA region. Concretely, an overall risk score will be generated to state their risk levels from the lowest to the highest in terms of entry, establishment and spread of *X. fastidiosa*. The economic impact will profile the impact of *X. fastidiosa* on the livelihood communal stakeholders in terms of source of income, the nature of losses occurred, extra costs and losses in production and landscape value, etc. in the demarcated zone in Italy as well as the same potential categories of costs for the most vulnerable crops in Lebanon. **[Michel Frem, Candidate PhD, UNIBA, Italy, 2019].**

[\(Lebanon-Italy\)](#)



GENERAL NEWS

Outbreak of Wheat Yellow Rust Disease in Iraq.

During the first week of April, social networking pages published news and pictures of the epidemic spread of wheat yellow rust disease, *Puccinia striiformis*, in wheat growing areas in Diyala and Nineveh governorates-Iraq. Scientific and administrative efforts have been mobilized to contain the crisis, but the damage was severe and may be due to the availability of conducive conditions of heat and humidity and the cultivation of disease susceptible varieties as well as intensive agriculture, increasing the amount of seeds per donum of more than 60 kg (Iraqi donum = 2500 m²).



Conference on “Integrated Pest Management of the Mediterranean Fruit Fly *Ceratitis capitata* on Cherries and Table Grapes in Bekaa” at Lebanese Agricultural Research Institute within the framework of PSD program funded by European Union and implemented by Expertise France-Lebanon.

Under the PSD Programme in Lebanon funded by the European Union and implemented by Expertise France, NATAGRI S.A.L. and the Agricultural Scientific Research Institute (LARI) organized a conference in the Bekaa Region on March 29th entitled "Integrated Pest Management of *Ceratitis capitata* on Cherry and Table Grape in the Bekaa region" in collaboration with the Chamber of Commerce, Industry and Agriculture of Zahle and Bekaa (CCIAZ) and “École Supérieure d'Ingénieurs d'Agronomie Méditerranéenne” (ESIAM-USJ). The conference aimed at informing farmers about the effect of the *Ceratitis capitata* which has become one of the most important and most dangerous insect in the Bekaa on table grapes and cherries production and to propose the different available solutions to be adopted at the farm level to prevent and fight against this Medfly invasion. National and international experts intervened during the conference and explained the best agricultural practices adopted by the farmers in their respective country in order to resolve the problem of *Ceratitis capitata*. A list of recommendations was established at the end of the conference to help farmers reduce the damages of the Medfly and produce high quality of fresh fruits that can compete in international markets. [Eng. Zinette Moussa, Lebanese Agriculture Research Institute, Department of Plant Protection, Lebanon, 2019].



Report on the 1st International Symposium on Biological and Integrated Control in Algeria CILBIA 1 (University Batna 2, Algeria).

The Scientific Association Biology, Biodiversity and Sustainability (BBD) and the International Organization of Biological and Integrated Control (OILB-SROP) organized at the Faculty of Natural Sciences and Life (University Mostefa Ben Boulaid, Batna 2- Algeria) the 1st International Symposium on the Biological and Integrated control in Algeria. The symposium was held from February 4 to 6, 2019 and was attended by about 300 participants from Algeria, Morocco, Tunisia, Mali and France. During this meeting, plenary lecture, oral and poster sessions were scheduled. Plenary sessions focused on the current status and prospects of biological control work in Algeria, Morocco, Tunisia and across the world. In the oral and poster sessions, participants presented work that focuses on biological control as a means of pests' management (pathogens, pests and insect vectors of disease). The work focused on study approaches using microorganisms, parasitoids and plant extracts. Studies also concerned the knowledge of pests threatening strategic crops. This symposium is the first major meeting of researchers involved in biological control in Algeria and the main works presented will be published in the IOBC newsletter. At the symposium closing ceremony, recommendations were presented, emphasizing the importance of the development of biocontrol as a means of pest management in Algeria as well as the constitution of a biological control network containing the skills and resource persons in Algeria. A post-conference excursion was organized in the Aurès region with a traditional lunch served in a Chaoui house in the Ghoufi area.



ESBCP WORKSHOP 2019- Egyptian Society for Biological Control of Pests

The Egyptian Society for Biological Control of Pests (www.esbcp.org) has the pleasure to welcome scientists, researchers, academicians, and those who are involved with various aspects of pests' management to participate in the workshop entitled "Recent Approaches in Biological Pest Control"



DATE: 17th of April 2019

VENUE: Pyramisa Hotel, Dokki, Giza, EGYPT

CORRESPONDENCE: Dr. Dalia Adly, Email: daliaadly27@hotmail.com, Tel: +201222771765

REGISTRATION FEES:

- 200 Egyptian pounds for ESBCP members
- 300 Egyptian pounds for non-ESBCP members

A Lecture on Biological Control at the Faculty of Agriculture and Food Sciences, American University of Beirut.

As part of the Faculty of Agriculture and Food Sciences (FAFS) of the American University of Beirut 2019 lecture series, a presentation entitled "Towards sustainable Production of Safer Fruits and Vegetables: Development and Use of Biological Control in Greenhouse Grown Vegetables" was presented by Dr. Don Elliot at FAFS on Tuesday, February 19, 2019. Dr. Elliot has over 50 years of experience in developing strategies to use natural enemies to manage greenhouse pests. He is the founder and former owner of Applied Bio-nomics, a major Canadian producer of biological control agents for green house and field production of vegetables and ornamentals and for landscape settings. The presentation of Dr. Elliot focused on the development and use of biological agents to manage plant pests, as an alternative approach to current spraying of toxic chemical pesticides which impose risk on the environment and human health. The presentation highlighted simple, cost effective approaches of bio-control that are ideal for greenhouse vegetable production. The lecture also summarized results of recent research conducted in Canada, USA and Lebanon. The invited lecture was followed by a presentation by Dr. Youssef Abu Jawdeh, FAFS, who gave a summary on FAFS research activities over the past three years related to the use of IPM practices in

plastic house vegetable production. The two lectures were followed by commentaries made by Dr. Bruce Parker and Margaret Skinner, both are IPM experts from the University of Vermont, USA who are involved in collaborative IPM research with FAFS, AUB. The lectures and commentaries were followed by a question and answer period with active participation from FAFS graduate students and other participants who joined this event.

EUPHRESKO EUROPEAN PHYTOSANITARY RESEARCH COORDINATION (Euphresco): An Opportunity for Phytosanitary Research Coordination and International Collaboration in the EPPO Region and Abroad.

Euphresco is a network of research programme owners, programme managers, national plant protection organisations and research institutes that collaborate together to coordinate national research activities and to catalyse international collaboration in plant health. Algeria, Jordan, Morocco, Tunisia and the International Center for Advanced Mediterranean Agronomic Studies are members of the network, but collaboration is open to organisations in any country. Recently efforts aim to raise the profile of pests important for the Mediterranean basin and of needs (capacity and infrastructures) of the various countries in the region. Each year, a number of trans-national research projects are started that enable the sharing of knowledge and development of expertise and increase the visibility of national research activities; the outputs of Euphresco projects address the needs of national plant protection organisations and provide scientific evidence to answer plant health policy questions. The links between policy and research and the role of Euphresco as a forum that brings together plant health research funders, policy makers and scientists is described in the article ‘Transnational European research collaboration to tackle plant health threats: Euphresco and its contribution to the new EU Plant Health Regulation’, recently published in the [EPPO Bulletin](https://www.euphresco.net/). <https://www.euphresco.net/>



International Entomological Congress (April 8-10, 2019)

An International Entomological Congress-2019 was successfully held in the University of Agriculture, Faisalabad, Pakistan during April 8-10, 2019. This event was successfully organized by Pakistan Entomological Society PES (founded in 1974) under the theme ‘**Conversing Emerging Entomological Challenges and their Solutions**’. This Congress was aimed to provide an international forum for the scientific presentations and discussions on various aspects of insect pest research by bringing together leading academia, scientists/ research scholars to share experience, innovations and provide novel ideas for the practical solutions of the problems in Entomology. Thus, the department of Entomology, University of Agriculture has provided a place for more than 1500 national and international delegates together in-order to develop connections with world renowned scientists under the following aspects as: Integrated pest management, Epidemiology, Medical & veterinary entomology, Acarology, Toxicology, Insect molecular genetics and systematics, Chemical ecology, Insect Pathology, Taxonomy, Entomological cottage industries, stored grain pest management, Biodiversity and Biological control. Different insecticide companies had provided finance to meet the event expenses, but the major contributory share was provided by CORTEVA agriscience. The participation of local farmers in last day of the Congress has made the said event more successful by addressing local issues with their possible pest solutions. The Congress was ended with vote of thanks by the Chairman, department of Entomology and Dean, Faculty of Agriculture, University of Agriculture, Faisalabad, Pakistan. **[Dr. Bilal Saeed Khan, Faculty of Agriculture, University of Agriculture, Faisalabad, Punjab, Pakistan. 2019].**



Establishment of “Sudanese Pest Management Society”



It is of pleasure to announce the establishment of the first voluntary professional society in the field of pest management in Sudan, called “Sudanese Pest Management Society (SPMS)”, which has been officially registered in January 2017. The mission of SPMS is to promote sustainable development based on sound scientific, social and environmental principles via participation in renaissance of scientific research, capacity building, transfer of knowledge, raising awareness, and adapting appropriate technologies in fields of agricultural and health pest management. The society has numerous objectives need to be fulfilled through variable possible routes in this aspect, including for instances cooperation and interactions with different relevant institutions, associations, organizations, community bodies and experts, internally and externally.

For additional information, you can visit the newly established website through the following link: <http://www.spms.org.sd>, info@spms.org.sd, 2017spms@gmail.com

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A New Issue of Syrian Journal of Agricultural Research (SJAR)

A new issue of Syrian Journal of Agricultural Research (SJAR) Vol 6 Issue 1 March (2019) is online now.

This issue contains (38) papers: (11) international papers from different countries: Tunisia (1), Libya (2), Iraq (5), Yemen (1) and Egypt (2).

<http://agri-research-journal.net/SjarEn/>



The Fourth Extension Plant Clinic - King Faisal University Saudi Arabia.

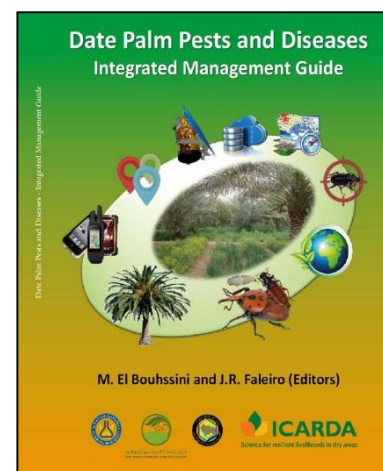
The Fourth Extension Plant Clinic was happened in the Eastern Province, Saudi Arabia, organized by Pests and Plant Diseases Unit, King Faisal University, in partnership with the Ministry of Environment, Water and Agriculture, Al Sharqia Branch during 4-6 April 2019 in one of the commercial complexes. Where the effectiveness focused on promoting the culture of the community by purchasing and nurturing plants house and encouraging members of the community at different ages and level of culture to the positive practices related to cultivation and attention to indoor and outdoor home plants. This event comes within the activities of the Pest and Plant Diseases Unit. The purpose of this event is to introduce the visitor using household safe materials to protect plant instead of pesticides, as well as helping the visitors to encourage them to do nurseries in their home. The event has more than one corner that begins to educate the visitor about the reasons for the acquisition of plants and how to choose and deal with them. In addition; plants of various types, shapes and sizes were presented to introduce the visitor to the ideal places where plants are placed in the house. Also, safe methods were announced in the treatment of house plants in the case of infested with an insect or infected by diseases, using some of the natural components from the house, such as using orange peel, garlic, soap and water, and advice visitors not to use pesticides on house. The child also had a corner to educate them about the seeds and how to plant them. The purpose of this corner is to introduce the idea of safe the plants and environment. There are also other corners such as fertilization and irrigation corner and the corner of rotation and propagation. During those three days, the number of visitors reached more than 700 visitors. Many of the visitors admired the event. [Dr Khalid Alhudaib, Head of Pests and Plant Diseases Unit, College of Agriculture and Food Science, King Faisal University, Saudi Arabia, 2019]



New Published Books 2019

Date Palm Pests and Diseases Integrated Management Guide'

The publication entitled '*Date Palm Pests and Diseases Integrated Management Guide*' is a unique document on the management of major date palm pests including insect pests and diseases, presenting the latest information on date palm Integrated Pest and Disease Management programs by leading authorities in the field. The topics covered include the basic principles and concepts of IPM, guidelines and methodologies for pest and disease surveillance, design and analysis of common IPM experiments, application of geoinformatics in mapping of pests and diseases, management of key insect pests, mites and diseases, besides addressing the importance of date palm field operations in reducing pest and disease losses. Increasing trade and rapid transportation has resulted in invasive species being detected and reported at a scale like never before. In this context, surveillance and quarantine programs are becoming increasingly important. The guide on date palm IPM describes the distribution, host range, damage symptoms, economic importance and biology of major insect pests, diseases and mites of date palm. Furthermore, the guide also presents recent innovative and novel pest management techniques in date palm, including population monitoring, cultural control, host plant resistance, biological control, chemical control, role of semiochemicals in date palm IPM and



also highlights emerging strategies in combating major diseases and mites of date palm. The publication of this guide is a result of the fruitful collaboration on date palm production system for the last decade between Abu Dhabi Food Control Authority (ADFCA), the Gulf Cooperation Council (GCC) countries, and the International Center for Agricultural Research in the Dry Areas (ICARDA). This book also benefited from the results of the IFAD funded project in Iraq on “improved livelihoods of small farmers in Iraq through integrated pest management and organic fertilization”. [Editors: M. El Bouhssini (Morocco-ICARDA) and J.R. Faleiro (India), 2018]. <http://repo.mel.cgiar.org/handle/20.500.11766/8914>

SELECTED RESEARCH PAPERS

- **Resistance to Cereal Cyst Nematodes in Wheat and Barley: An Emphasis on Classical and Modern Approaches.** Muhammad Amjad Ali, Mahpara Shahzadi, Adil Zahoor, Abdelfattah A. Dababat, Halil Toktay, Allah Bakhsh, Muhammad Azher Nawaz, Hongjie Li, Int. J. Mol. Sci. 2019, 20, 432.
- **Occurrence and Seasonal Variation of the Root lesion Nematode *Pratylenchus neglectus* on Cereals in Bolu, Turkey.** Abdelfattah Dababat, Şenol Yildiz, Vahdettin İfti, Nagihan Duman, Mustafa İmren. [doi:10.3906/tar-1805-52](https://doi.org/10.3906/tar-1805-52).
- **Host Suitability of Different Wheat Lines to *Pratylenchus thornei* under Naturally Infested field conditions in Turkey.** Abdelfattah A. Dababat, Fouad Mokrini, Salah-Eddine Laasli, Şenol Yildiz, Gül Erginbas-Orakci, Nagihan Duman And Mustafa İmren, Nematology 0, 2018, 1-15.
- ***Xylella fastidiosa* in Olive in Apulia: Where We Stand.** M. Saponari, A. Giampetruzzi, G. Loconsole, D. Boscia, and P. Saldarelli, The American Phytopathological Society (APS), Volume 109, Number 2, February 2019. <https://doi.org/10.1094/PHYTO-08-18-0319-FI>
- **The Epidemiology of *Xylella fastidiosa*: A Perspective on Current Knowledge and Framework to Investigate Plant Host-Vector-Pathogen Interactions.** Michael Jeger and Claude Bragard, The American Phytopathological Society (APS), Volume 109, Number 2, February 2019. <https://doi.org/10.1094/PHYTO-07-18-0239-FI>
- **Addressing the New Global Threat of *Xylella fastidiosa*.** R. P. P. Almeida, L. De La Fuente, R. Koebnik, J. R. S. Lopes, S. Parnell, and H. Scherm, The American Phytopathological Society (APS), Volume 109, Number 2, February: 172–174, 2019. <https://doi.org/10.1094/PHYTO-12-18-0488-FI>.

PAPERS PUBLISHED IN THE ARAB JOURNAL OF PLANT PROTECTION (AJPP) VOLUME 37, ISSUE 1, MARCH 2019

BIOLOGY

Biological aspects of the scarabid beetle *Maladera insanabilis* (Brenske) and its population density.

R.F. Al-Jassany and A.B. Al-Juboory (IRAQ)

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- **Overview of the gaps, challenges and prospects of red palm weevil management.** J.R. Faleiro, Michel Ferry, Thaer Yaseen and Shoki AlDobai (India, Spain, FAO-Egypt, FAO-Italy).
- **Studies on service free semiochemical mediated technologies to control red palm weevil *Rhynchophorus ferrugineus* Olivier based on trials in Saudi Arabia and India.** J.R. Faleiro, Abdul Moneim Al-Shawaf, H.A.F. El-Shafie and Samir Pai Raikar (India & Saudi Arabia).
- **A simple and low cost injection technique to protect efficiently ornamental Phoenix against the red palm weevil during one year.** Susi Gomez and Michel Ferry (Spain).
- **Red palm weevil (*Rhynchophorus ferrugineus* Olivier): recent advances.** F. Gonzalez, S. Kharrat, C. Rodríguez, C. Calvo and A.C. Oehlschlager (Costa Rica, Tunisia).
- ***Billaea rhynchophorae*, a palm weevil parasitoid with global potential.** Bernhard Löhr, Aldomario Negrisoli and Juan Pablo Molina (Colombia & Brazil).
- **Red palm weevil monitoring and early warning system.** Keith Cressman (FAO).
- **Controversial aspects about red date palm weevil.** Hassan Y. Al Ayedh, Ahmed M. AlJber (Saudi Arabia).
- **Is the use of entomopathogenic fungi a viable option for the control of Red Palm Weevil?** M. El Bouhssini, A.N. Trissi and Z. Kadour (Morocco & Syria).
- **Is Policy Paralysis on quarantine issues in the Near East and North Africa region leading to the buildup and spread of Red Palm Weevil, *Rhynchophorus ferrugineus* ?.** Sarath B Balijepalli and J R Faleiro (India).
- **Management of the red palm weevil *Rhynchophorus ferrugineus* (Olivier) using sustainable options in Saudi Arabia.** M. Ali-Bob (Saudi Arabia).
- **An effective strategy to obtain very rapidly the Red Palm Weevil decline in an area planted with ornamental palms.** Michel Ferry, Raphaël Cousin, Daniel Chabernaud and Frederic Ferrero (France).
- **Microwave heating: A promising and eco-compatible solution to fight the spread of Red Palm Weevil.** R. Massa, G. Panariello, M.D. Migliore, D. Pinchera, F. Schettino, R. Griffo, M. Martano, K. Power, P. Maiolino and E. Caprio (Italy).
- **Date palm value chain development and the control of red palm weevil in Egypt.** M.K. Abbas and Thaer Yaseen (Egypt & FAO-Egypt).
- **Efficiency of food baits, synthetic attractants and trap type on *Rhynchophorus ferrugineus* (Olivier) trapping in palm Plantations- Ismailia, Egypt- by aggregation pheromone traps.** A. El- Banna, M.K. Abbas, A. Hala and T.M. Ibrhium (Egypt).
- **The economic impact of red palm weevil *Rhynchophorus ferrugineus* Olv. in Egypt.** Mohamed Kamal Abbas (Egypt).
- **The effect of preventive measures in reducing red palm weevil infestation.** Mohamed K. Abbas (Egypt).
- **Automatic localization of phoenix by satellite image analysis.** R. Cousin and M. Ferry (Spain).

- **Effects of entomopathogenic fungi on mortality, fertility and fecundity of red palm weevil.** Waqas Wakil, Muhammad Usman, Sehrish Gulzar (Pakistan).
- **Early detection and preventive control of *Rhynchophorus ferrugineus* (Coleoptera Curculionidae): a quarantine pest in Brazil.** V.A. Dalbon, J.P.M. Acevedo, A.E.G. Santana, H.F. Goulart, I. Laterza, A. Riffel, A. Negrisoli Jr., B. Lohr and F. Porcelli (Brazil, Colombia & Italy).
- **The world situation and the main lessons of 30 years of fight against the red palm weevil.** Michel Ferry (Spain).

EVENTS OF INTEREST 2019-2020

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| 17-19 MARCH, 2019 | The 3 rd Minia International Conference on Agriculture and Irrigation in the Nile Basin Countries. www.minia.edu.eg/Minia/ |
| 26–30 MAY, 2019 | 15th Symposium on Bacterial Genetics and Ecology (BAGECO), in Lisbon/Portugal. www.bageco.org |
| 7-10 JULY, 2019 | The 8 th International Symposium on Molecular Insect Science, Sitges, Barcelona, Spain. https://www.elsevier.com/events/conferences/international-symposium-on-molecular-insect-science/about/testimonials |
| 8-12 September, 2019 | 4th Meeting of the International Phytoplasma Working Group, Valencia, Spain. http://valencia2019.ipwgn.net/doc/IPWG2019_Second-Circular.pdf |
| 11-13 SEPTEMBER, 2019 | 7th International Entomopathogens and Microbial Control Congress in Kayseri Turkey. http://emc2019.erciyes.edu.tr/ |
| 3-6 OCTOBER, 2019 | 10th International Agriculture Symposium "AGROSYM 2019"- Bosnia & Herzegovina. http://agrosym.ues.rs.ba/index.php/en/ |
| 10-14 NOVEMBER, 2019 | XIX International Plant Protection Congress, IPPC 2019, Hyderabad International Convention Centre, Hyderabad India. http://ippc2019.icrisat.org/index.php |
| 29 OCTOBER - 30 OCTOBER, 2019 | Second European conference on Xylella fastidiosa Ajaccio, Corsica. https://events.efsa.europa.eu/event/ar/1/xylella-2019 |
| 16-19 JUNE, 2020 | 4 th International Conference on Global Food Security Achieving local and global food security. Montpellier, France. http://www.globalfoodsecurityconference.com/ |
| 19 -24 JULY, 2020 | XXXVI International Congress of Entomology, Helsinki, Finland. www.ice2020helsinki.fi |
| 1-6 NOVEMBER, 2020 | The 13th Arab Congress of Plant Protection in Tunis (2020), Hammamat, Le Royal Hotel, Tunisia. www.acpp-aspp.com |

Photos from Lebanon



AJAJ MICHEL FREJII- Akkar North Lebanon

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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.

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