ARAB AND NEAR EAST PLANT PROTECTION NEWSLETTER

Food and Agriculture Organization of the United Nations

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

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EDITORIAL

The International Year of Plant Health (IYPH) 2020 - Protecting Plants, Protecting Life

In December 2018, the United Nations General Assembly declared 2020 as the International Year of Plant Health (IYPH). The year is a once in a lifetime opportunity to raise global awareness on how protecting plant health can help end hunger, reduce poverty, protect the environment, and boost economic development. The Food and Agriculture Organizations of the United Nations (FAO), in collaboration with the International Plant Protection Convention (IPPC), is the lead UN agency for the event.

Healthy plants constitute the foundation for all life on Earth, ecosystem functions, as well as food security. Plants make up 80 percent of the food we eat and produce 98 percent of the oxygen we breathe. Plant pests and diseases leave millions of persons without food to eat and negatively affect agriculture, which is the primary source of income of rural poor communities.

Plant health is fundamental for reaching the 2030 Agenda for UN Sustainable Development Goals. Hence, sustaining plant health is an integral part of the sustainable development of agriculture to feed the growing global population by 2050. Protecting plants from pests and keeping plants healthy support efforts to end hunger, malnutrition and poverty; protect the environment, forests and biodiversity; address the effects of climate change; and boost economic development.

The IYPH is a unique opportunity to raise awareness on the important role of plant health for life of earth and to promote activities in favour of preserving and sustaining global plant resources. It will also raise public awareness globally about the importance of plant health and improve plant health policies, capacity development and resource mobilization opportunities for plant health institutions.

IYPH aims to mobilize governments, industries, civic organizations, scientists, and the public to work together in protecting the world's plants against the spread of devastating pests; encourage scientific innovation to address pest threats; promote responsible practices that reduce the spread of pests; and increase public and private sector support and investment for more sustainable plant health strategies and services.

Plant Health starts with prevention, so everyone is invited to contribute to protecting plant health inspired by the following key messages:

- **Keep plants healthy to achieve Zero Hunger and the Sustainable Development Goals.**

Policies and actions to promote plant health are fundamental for reaching the Sustainable Development Goals, in particular those aimed at eliminating hunger and malnutrition and reducing poverty and threats to the environment.

- **Be careful when bringing plants and plant products across borders.**

Help reduce the spread of plant pests and diseases, which can seriously damage national food security, the environment and economies. Make sure that the phytosanitary requirements are applied when bringing plants or plant products when travelling, and be careful when ordering

plants and plant products online, or through postal services, since packages can easily bypass regular phytosanitary controls.

- **Make trading in plants and plant products safe by complying with the international plant health standards**

It is important to implement international plant health standards and norms, such as those developed by the International Plant Protection Convention (IPPC) and FAO to make trade safe. This reduces the negative impact of pests and pesticides on human health, economies and the environment. It also makes it easier to prevent and control the spread of pests and diseases without setting up unnecessary barriers to trade.

- **Keep plants healthy while protecting the environment.**

When combatting pests and diseases, farmers should adopt, and policymakers should encourage the use of, environmentally friendly methods such as integrated pest management.

- **Invest in plant health capacity development, research and outreach.**

Governments should invest more in plant health related research and outreach, as well as innovative practices and technologies, and empower plant protection organizations and other relevant institutions, and provide them with adequate human and financial resources.

- **Strengthen monitoring and early warning systems to protect plants and plant health.**

Regularly monitoring plants, and receiving early warning information about emerging threats, helps governments, agricultural officers and farmers take preventive and adaptive measures to keep plants healthy.

The FAO will officially launch the IYPH, presided by the UN Secretary General and FAO Director General, through a FAO Council Special Session on 2 December 2019 at FAO Headquarters in Rome.

Everyone should promote the IYPH! To help you do this, FAO's IYPH team has set up a website with the IYPH logo in your language, downloadable communications resources including posters, videos and toolkits, and a list of global, regional and national IYPH events. Many global, regional and national IYPH events are being scheduled, including the IYPH global key event, and the International Plant Health Conference "Protecting plant health in a changing world" to be held from 5 to 8 October 2020 in Helsinki, Finland.

Many of the events will be organized by national and regional plant protection organizations and institutions, and we encourage you to get in contact with relevant organizers to join these activities; as well as organize your own events.

For more information on the IYPH and programme of events, please visit IYPH webpage: www.fao.org/plant-health-2020 or write: iyph@fao.org

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❖ Crop Protection News from Arab and Near East Countries

INVASIVE AND NEW PESTS

ALGERIA

First Record of the Mealybug *Phenacoccus madeirensis* Green, 1923 (Hemiptera: Coccomorpha: Pseudococcidae) in Algeria. The mealybug *Phenacoccus madeirensis* Green (Hemiptera: Coccomorpha: Pseudococcidae) is recorded from Algeria for the first time. This pest was first detected in the summer of 2018 in private gardens in Salamandre, on the coastal side of Mostaganem City in north- western Algeria, feeding on three ornamental plants: *Hibiscus rosa- sinensis* L., *Hibiscus syriacus* L. (Malvaceae) and *Cestrum nocturnum* L. (Solanaceae). In October 2018, it was also found on *Aloysia citriodora* Palàu (Verbenaceae) growing near *Hibiscus*. The first samples collected had been attacked by hymenopteran parasitoids. Surveys of ornamental nurseries and greenhouses growing vegetables in the area indicate that, at present, *P. madeirensis* seems to be restricted to ornamental plants. More surveys over larger areas are needed to determine its distribution and the likely origin of its introduction to Algeria.

[Y. Guenaoui[1](Algeria) , G. W. Watson[2] and Z. E. Labdaoui[1], [1]Department of Agronomy, Faculty of Nature and Life Sciences, University A. Ibn Badis Mostaganem, SITE 3, EX ITA, Mostaganem, 27000, (Algeria); e-mail: yguena@yahoo.fr**, [2]Department of Life Sciences, The Natural History Museum, Cromwell Road, London, SW7 5BD (UK), OEPP/EPPO, EPPO Bulletin, 0(0), 1-3,2019].**

First Report of *Alternaria* Leaf spot caused by *Alternaria alternata* (Fries.) Kiessler on *Sonchus oleraceus* L. and *Convolvulus arvensis* L. in Algeria. *Alternaria* leaf spot caused by *Alternaria alternata* (Fries.) Kiessler was found on sow thistle (*Sonchus oleraceus* L.) and field bindweed (*Convolvulus arvensis* L.) in the experimental station of ENSA (Ecole Nationale Supérieure d'Agronomie) in Algiers, Algeria, during the winter of 2016. Necrotic spots in the form of concentric circles were observed on the leaves of both weeds with disease incidence of approximately 70% and disease severity ranging from 50% to 70%. Fungi were isolated from the infected leaves and identified as *A. alternata*, based on morphological and molecular analyses (using genetic marker internal transcribed spacer, ITS of rDNA). Pathogenicity tests confirmed that *A. alternata* is the causing agent of leaf spot disease of sow thistle and field bindweed in accordance with the original symptoms. To the best of our knowledge, this is the first report of sow thistle and field bindweed naturally infected by *A. alternata* in Algeria. **[Nesma Abdessemed, Ali Kerroum, Youssef Anis Bahet, Nacèra Talbi, Nadjia Zermane. Department of Botany, Ecole Nationale Supérieure d'Agronomie (ENSA, ex. INA), El-Harrach, Algiers, Algeria. Faculty of Sciences, University Algiers 1, Algiers, Algeria, Journal of Phytopathology, Volume 167, Issue 6.2019].** https://doi.org/10.1111/jph.12800

EGYPT

New Record and Redescription of *Mullederia sichuanensis* Wang from Evergreen Forests in Japan, with Remarks on Morphological Variations among World species of *Mullederia* Wood (Acari: Stigmaeidae). The *Mullederia* Wood, 1964 (Acari: Stigmaeidae) is a species-limited genus with a geographic distribution so far restricted to eastern Palaearctic, Indomalaya and Australasia regions. *Mullederia sichuanensis* Wang, 1986 is newly recorded from Japan based on specimens collected from two different evergreen broad-leaved forests at Bōsō Peninsula, Chiba Prefecture (Honshu). Adult females, males and deutonymphs are redescribed and illustrated. Interspecific morphological variations among world species of *Mullederia* are provided. Also, stigmaeid mite species recorded from Japan are listed. **[Mohamed W. Negm (Egypt), Department of Plant Protection, Faculty of Agriculture, Assiut University, 71526 Assiut, Egypt (waleednegm@yahoo.com; waleednegm@aun.edu.eg); Laboratory of Applied Entomology & Zoedology, Faculty of Agriculture,**

Ibaraki University, Ami, Ibaraki 300-0393, Japan. Tetsuo Gotoh,(Japan), Systematic & Applied Acarology 24(7): 1150–1161, 2019]. http://doi.org/10.11158/saa.24.7.4

A New Larval *Lassenia* Newell, 1957 (Trombidiformes: Tanaupodidae) from Japan. *Lassenia japonica* Haitlinger, Negm & Šundić sp. nov. with fnCx 1-1-2 is described and illustrated from larvae collected from *Maesa japonica* (Primulaceae) in Japan. It is the first species of Tanaupodidae found in Japan. A key to *Lassenia* (larvae) of the world is provided. **Ryszard Haitlinger** Institute of Biology, Department of Invertebrate Systematics and Ecology, Wrocław University of environmental and Life Sciences, 51-631 Wrocław, Kożuchowska 5B, Poland**.[Mohamed W. Negm (Egypt), Department of Plant Protection, Faculty of Agriculture, Assiut University, Assiut, Egypt; Laboratory of Applied Entomology & Zoology, Faculty of Agriculture, Ibaraki University, Ami, Ibaraki 300-0393, Japan. Tetsuo Gotoh, Faculty of Economics, Ryutsu Keizai University, Ryugasaki, Ibaraki 301-8555, Japan, Miloje Sundic, Department of Biology, Faculty of Science, University of Montenegro. Systematic & Applied Acarology 24(1): 33–44, 2019].** DOI: http://dx.doi.org/10.11158/saa.24.2.9

IRAQ

First Report of Citrus Bacterial Canker caused by *Xanthomonas axonopodis* pv. *citri* in Iraq. Collected citrus leaves, with erumpent, callus - like lesions with a water-soaked margin of Tangerine (*Citrus reticulate* Blance), Mexican lemon (*Citrus limon*), and Sweet orang (*Citrus sinensis* Osbec) from different orchards in Diyala, Baghdad and Babylon Governorate of Iraq. Pathogenicity of different isolates was confirmed along with symptoms under laboratory condition on detached leaf using pin prick method, observed that 21 (60%) isolate *Xac*. was highly virulent to initiate water-soaked lesion and fully developed symptoms within 10 to 15 days, 14 (40%) isolate *Xac*. were less virulent. The results of morphological (shape, colony and color) and biochemical characteristic (gram reaction, starch hydrolysis, gelatein liquefaction, KOH test, Indole production, oxidase reaction, acid and gas production, catalase reaction, fluorescent pigmentation test and NaCl tolerant). Molecular identification was performed by PCR using specific primer *J-pth J-pth2* amplicon 198 bp indicated the occurrence of CBC in Iraq. All isolates 35 (100%) were harbor *pthA* gene. These represent the first report of CBC in Iraq. **[Al-Dulaimi, F. T. R.; Al-Kaisse, A. A.; Al-Rubaye, L. A.; Abdulwadood, M. A.(Iraq), Journal of Biotechnology Research Center, Vol 12 No. 2 pp. 24-31, 2018].**

IRAN

***Xylella fastidiosa* causes Leaf Scorch of Pistachio (*Pistacia vera*) in Iran.** Since the early 2010s, pistachio (*Pistacia vera* L.) leaf scorch symptoms have been observed in orchards in several provinces in Iran. Seventeen of 83 symptomatic leaf samples from pistachio plants from 21 orchards were positive for the presence of *Xylella fastidiosa*, as detected by DAS-ELISA with *X. fastidiosa*-specific antibodies and by PCR assays with *X. fastidiosa*-specific primers. A Gram-negative bacterium simi- lar to *X. fastidiosa* was isolated into solid media. DAS-ELISA and PCR confirmed the identity of the isolated bacteria as *X. fastidiosa*. Koch's postulates were fulfilled by arti- ficially inoculating isolates obtained from pistachio showing leaf scorch to healthy pis- tachio and Nicotiana tabacum (cv. White Burley). Selected isolates induced leaf scorch symptoms when inoculated on tobacco and pistachio seedlings grown under green- house conditions. Early leaf scorch symptoms appeared approx. 2 months after inocu- lation of tobacco and approx. 3 months for pistachio. Reisolation of *X. fastidiosa* from inoculated and symptomatic plants and DAS-ELISA and PCR tests confirmed the iden- tity of the re-isolated bacteria to be *X. fastidiosa*. On the basis of disease symptoms, pathogen isolation, pathogenicity tests and positive diagnosis by DAS-ELISA and PCR, *X. fastidiosa* is concluded to be the causal agent of pistachio leaf scorch in Iran. This is the first report of isolation and pathogenicity of X. fastidiosa in pistachio worldwide. [**Naser Amanifar, Ghobad Babaei, Amir Hossein Mohammadi (Iran), Phytopathologia Mediterranea, 58(2); 369-378,2019].**

JORDAN

Discovery of a New Plant Virus Threatening the World Tomato Industry. Tomato (*Solanum lycopersicum*) is an important crop, which can be infected by diverse pathogens. Among plant viruses, *Tomato mosaic virus* (ToMV) had been described as the most troublesome to tomato crops. Recently, *Tomato brown rugose fruit virus* (ToBRFV) has gained more attention. ToBRFV is a new *Tobamovirus* infecting tomato crop grown in protected environments, it has been discovered and identified for the first time in Jordan by Salem *et al*. (2016). ToBRFV is now present in Palestine (Luria et al., 2017: Alkowni et al., 2019), Germany (Menzel et al., 2019), Italy (Panno et al., 2019) and probably in other EU countries. Additional new reports also highlighted the presence of ToBRFV in Mexico (Cambron-Crisantos et al., 2018), California (Ling et al., 2019), Turkey (Fidan et al., 2019) and China (Yan et al., 2019). This virus can infect up to 100 % of tomato plants and lead to mosaic discoloring and deformation of the fruits. The fruits clearly lose their value or are not marketable. ToBRFV is transmitted very quickly by seed and mechanically handled plants. The virus can survive on many surfaces and may be transmitted from there to host plants. Tomato and pepper are the main hosts for the virus. ToBRFV-control mainly relies on conventional typical measures against Tobamoviruses. One of these measures is the use of virus-tested seeds and planting material. Furthermore, strict sanitization measures have to be applied to prevent the virus movement to other production sites or further seed companies. However, one of the problematic characteristics of ToBRFV its ability to overcome all known genetic resistance, including the *Tm-2*^{2}, in tomato, and cause severe fruit symptoms on resistant varieties. So far, the available resistance-genes in conventional tomato varieties against other Tobamoviruses are not effective against ToBRFV. Since the disease is established in many countries where tomatoes are intensively grown a global disease management strategy is highly necessary. Currently, only little information on the virus is available and thus, further possible damage on other plants cannot be excluded. Potential host plants are also present outdoors that could at least serve as a reservoir for new infections. Due to its high damage potential for the tomato production, ToBRFV poses a considerable phytosanitary risk for Mediterranean countries, EU-Member States and US tomato industry. Based on the preliminary risk analysis it is assumed that the virus is able to rapidly establish and cause considerable damage. Therefore, ToBRFV outbreaks require immediate and full response at a very early stage, which includes its efficient and accurate on-site detection and management of the disease**. [Salem, N., Mansour, A., Falk, B., Turina, M. and Tahzima, R.(Jordan), Department of Plant Protection, Faculty of Agriculture, the University of Jordan, Amman, Jordan.Department of Plant Pathology, University of California, Davis, California, USA, Istituto per la Protezione Sostenibile delle Piante, Turin, Italy, Department of Phytopathology, University of Liège, Gembloux AgroBioTech, Gembloux, Belgium.**

LEBANON

First Report of Grapevine Pinot Gris Virus in Lebanon and the Middle East. Grapevine Pinot gris virus (GPGV) from the genus Trichovirus, family Betaflexiviridae, has been reported from several grape-growing regions of the world in asymptomatic and symptomatic vines showing leaf mottling and deformation (Saldarelli et al. .--2017). A total of 108 grapevine samples representing 14 cultivars (Black Magic, Superior Seedless, Midnight Beauty, Black Pearl, Red Globe, Crimson, Vermentino, Marselan, Chardonnay, Petit Verdot, Cabernet Sauvignon, Merlot, Pinot noir, Syrah) were collected randomly from nine vineyards located in Bekaa Valley of Lebanon. Samples were analysed by RT-PCR for the presence of GPGV using two sets of primer pairs (DetF/DetR) targeting the movement protein (MP) and coat protein (CP) genes (Morelli et al. .--2014) and primers (GPGVRepF/GPGVRepR) partially covering the RNA-dependent RNA polymerase (RdRp) domain of the GPGV replicase gene (Saldarelli et al. .--2015). Results showed that two Black Magic and four Superior Seedless table grape cultivars, and four Vermentino and four Marselan wine grape cultivars were infected with GPGV. None of the infected vines showed disease symptoms. Infection with GPGV was found in single or multiple infections with grapevine virus A and grapevine fleck virus. The last two viruses were found by DAS ELISA (Agritest, Italy).

DNA fragments of the RdRp and MP/CP genes of the Lebanese GPGV isolate G7, from cultivar Superior Seedless, were cloned and sequenced. Sequences were deposited in GenBank as accession numbers MK201686 and MK201687. Analysis of the Lebanese GPGV sequences showed the C/T polymorphism in the stop codon of the MP gene that is associated with asymptomatic GPGV isolates (Saldarelli et al.,2015). This is the first detection of GPGV in Lebanon and the Middle East.**[Raied Abou Kubaa, Elia Choueiri, Fouad Jreijiri, Yara El Khoury, Pasquale Saldarelli, CNR Istituto per la Protezione Sostenibile delle Piante, Bari-Italy ; Department of Plant Protection, Lebanese Agricultural Research Institute, Tal Amara, Zahlé, Lebanon ,Dipartimento di Scienze del Suolo, Università degli Studi di Bari 'Aldo Moro'BariItaly, Journal of Plant Pathology 6.12.2019,** https://link.springer.com/article/10.1007%2Fs42161-019-00455-8

First Report of Pittosporum Cryptic Virus-1 in *Pittosporum Tobira* in Lebanon. *Pittosporum tobira* or Japanese pittosporum is an ornamental greenhouse plant widely used in landscaping and along roadsides, as well as in parks and gardens. In Lebanon, symptoms of chlorotic vein banding were observed on six plants of *P. tobira* growing in two gardens located in the Beqaa Valley. A total of 48 samples were randomly collected from several sites in the Beqaa Valley, including the two gardens. Samples were tested by DAS-ELISA (Loewe, Germany) for the presence of eggplant mottled dwarf virus and tomato spotted wilt virus. None of these two viruses was detected in the collected samples. Then, total RNA was extracted from six symptomatic and six symptomless plants and tested by RT-PCR for the presence of Pittosporum cryptic virus 1 (PiCV1), a recently described double stranded RNA virus that belong to the genus *Deltapartitivirus* in the family *Pastitiviridae* (Elbeaino *et al.*, 2016). Two pairs of specific primers were designed based on the available sequence in GenBank (accession number LN680393): [PiCV1-cpF: (5'TGGCAGCATTACCGAAGGTT3') and PiCV1-cpR: (5'TGTGTCGGCAATCAAAGGGA3')] to target a 279 bp fragment of the coat protein gene, and [PiCV1-rdrp637: (5'ACTCGCACACAACTAACGGA3') and PiCV1-rdrp1008: (5'CGGTGCTGCCACCTTCTTAT3')] to target a 372 bp of the RNA-dependent RNA polymerase gene in RT-PCR. DNA amplicons were obtained from the six symptomatic plants while no amplification was observed from the six symptomless plants. To verify the nature of the DNA products, three RT-PCR amplicons were sequenced. BLAST analyses revealed 98-99% nucleotide identity with the Italian isolate Pit-MAIB in both amplified genes and 99-100% similarity among the Lebanese isolates. Sequences of the Lebanese isolates were deposited in GeneBank as accession numbers LR735543-LR735544. To the best of our knowledge, this is the first report of PiCV1 in *P. tobira* in Lebanon. Partitivirus have been mainly associated with cryptic infections in both plants and fungi (Roossinck, 2013). PiCV1 was first reported on *P. tobira* in Italy. Although cryptic viruses have no known vectors and are not transmitted mechanically or by grafting, they are vertically transmitted at high rates by ovule or pollen (Guy and Gerard, 2016). Therefore, PiCV1 has the potential to spread in other Lebanese regions and neighboring countries. [**Raied Abou Kubaa., Pasquale Saldarelli., Basem Attar, Fouad Jreijiri, Elia Choueiri, CNR Istituto per la Protezione Sostenibile delle Piante, Bari, Italy; Department of Plant Protection, Lebanese Agricultural Research Institute, Tal Amara, Zahlé, Lebanon, International Center for Agricultural Research in the dry areas (ICARDA), Beirut, Lebanon, Journal of Plant Pathology 18.11.2019].** https://doi.org/10.1007/s42161-019-00455-8

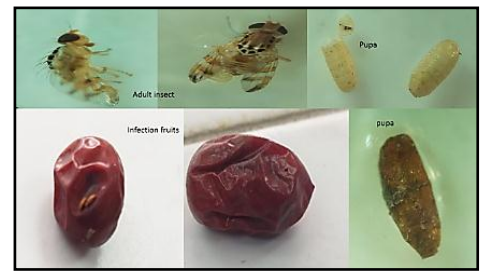
First Records of the Invasive species *Leptoglossus occidentalis* Heidemann (Hemiptera: Coreidae) on different Coniferous Species including the Cedars of Lebanon. The western conifer seed bug, *Leptoglossus occidentalis*, is an alien invasive species of North American origin. *Leptoglossus occidentalis* was recorded for the first time in Arsoun-Metn, Lebanon in 2015. Adults and nymphs of *L. occidentalis* were collected by the authors from various locations in Lebanon and observed on two species of pine, *Pinus pinea* and *Pinus brutia*, on *Juniperus excelsa* and even on *Cedrus libani*. This could indicate its successful integration in the country and its presence on many coniferous tree species. Studies to investigate the behaviour and the economic impact of this alien insect species in Lebanon are recommended. **[Nabil Nemer, Yara El Khoury, Elise Noujeim, Yara Zgheib, Eustachio Tarasco and Torsten van der Heyden (Lebanon), Department of Agriculture and Food Engineering, Holy Spirit University of Kaslik, Jounieh, Lebanon. Department of Soil Plants and Food Sciences, University of Bari Aldo Moro, Bari, Italy. National Center for Marine Sciences, National Council for Scientific Research – CNRS, Beirut, Lebanon. 4I mmenweide 83, D-22523 Hamburg, Germany, Revista Chilena de Entomología, 45 (4): 507-513, 2019].**

PALESTINE

First Report of *Fusarium euwallaceae* on Avocado Trees in Palestine. A new die back symptoms in many avocado orchards had been reported in Palestine. The disease is associated with the Ambrosia beetle *Euwallacea fornicatus*. Stem samples from infected avocado trees with obvious symptoms were collected from different regions in Palestine. Stem cuttings and dissected adult and galleries of the insect were placed on potato dextrose agar media and incubated for 5–7days at 25 _C. PCR amplification using EF1/2 specific primers was performed to identify the isolated fungus. The resulting PCR products were sequenced. BLASTn search showed 99% similarity with *Fusarium euwallaceae* (Accession Nos. JX891785.1, JQ723763.1, JQ723762.1 and JQ723761.1). The isolated fungus was identified as *F. euwallaceae* (Genbank accession no. MK054177). **[Mazen Salman, Rola Mahmoud, Ziad Fadda, Osama Alabdallah, Khadija Najjar, Jehad Radwan and Ruba Abuamsha, A) College of Agricultural Science and Technology, Palestine Technical University-Kadoorie, Tulkarm, State of Palestine. B) Ministry of Agriculture, National Agriculture Research Center, State of Palestine. Archives of Phytopathology and Plant Protection.** https://doi.org/10.1080/03235408.2019.1682904

SYRIA

First Record of Fruit fly *Carpomya vesuviana* Costa, 1854 (Diptera: Tephritidae) on the Jujube Plant *Ziziphus* spp. in Al-Hawash area, Homs Governorate, Syria. The insect of the fruit fly Carpomya vesuviana Costa, 1854 (Diptera: Tephritidae) was recorded on the jujube trees in the buckthorn family (Rhamnaceae). The rate of fruit infection reached more than (65%). Body of insect is plump; predominantly yellow. Number of frontal bristles three pairs. Number of orbital bristles two pairs. Head higher than long. Male and female head width the same. Face flat; shorter than frons without dark marks. Eye round, about high as or slightly higher than long. Antenna considerably shorter than face, or about as long as face. Arista longer than first flagellomere. Inner scapular bristle present and distinguishable from surrounding vestiture; pale. Outer scapular bristle present and distinguishable from surrounding vestiture; pale. Number of scutellar bristles two pairs. Apical scutellar bristles as long as basals or longer. Number of outstanding anepisternal bristles two. Anepisternal bristles dark, brown to black Transverse suture with the lateral branches wide apart. Scutum yellowish, or orange-brown, or black; without a large dark central stripe which broadens basally. Number of pale whitish to yellow postsutural stripes four. Katepisternite with pale yellowish or whitish spot present and distinct. Subscutellum yellowish to orange-brown medially, with distinct dark spots laterally. Femora swollen. Fore femur with 1 to 3 posterodorsal and 1 posteroventral rows of bristles only. Femora all entirely of one color without dark marks. Wing partly bare. Cell c microtrichia covering whole cell. Wing pattern cross-banded. Crossbanded wing patterns Rhagoletis-like. Wing pattern mostly yellowish. Crossvein dm-cu covered by a major crossband which reaches posterior margin of wing. Cell r2+3 apical to r-m with large hyaline area. Cell r1 and r2+3 with distinctly darker spots within dark areas of pattern. Subbasal and discal crossbands not joined. Marginal hyaline area in cell r1 present and distinct. Anterior apical band or costal band extended to vein M. Vein R2+3 generally straight. Distance between crossvein r-m and costa longer than r-m. Abdomen: Abdomen ovate or parallel sided. Abdominal tergites separate. 6th tergite of female exposed; longer than 5th. Abdominal setulae acuminate and dark. Posterior margin of sternite 5 of male with deep V-shaped posterior concavity. Male Terminalia: Epandrium in posterior view with long outer surstyli, which are more than half as long as epandrium; lateral view with outer surstyli distinctly narrower than epandrium. Female Terminalia: Aculeus tip gradually tapering, needle-like, with flat cross-section; fused to main part of aculeus, not movable. **[Abdulnabi Basheer, Ghassan Ibrahim, Faek Abd Alrazaq, Moaz Zouriky (Syria), Biological Control Studies and Research Center, Faculty of Agriculture, Damascus University, 2019].**



First Report of the Lacebug *Corythauma ayyari* (Drake) (Hemiptera: Tingidae) on *Jasminum grandiflorum* L. and *Jasminum sambac* (L.) from Syria. In Syria, defoliation was noted on several *Jasminum grandiflorum* and *Jasminum sambac* plants in various gardens in Latakia City and countryside in 2017. Subsequently, several male and female specimens of a lacebug insect were collected from the white jasmine,

Jasminum grandiflorum, planted in the garden of the Latakia Center for Agricultural Research during 2018. Collected material was examined and identified as *Corythauma ayyari* (Drake). Infestation by this insect is considered by the authors to cause the defoliation of jasmine plants in Latakia City and it is reported to occur in Syria for the first time**. [Mahran Zeity, Ali Y. Ali (Syria), Bulletin OEPP/EPPO Bulletin, 49 (2), 398–400, 2019].**

TUNIS

New Pseudococcidae Species on *Cupressus macrocarpa* in Tunisia: First Report of *Planococcus vovae*. In May 2017 and 2018, *Planococcus vovae* (Nasonov) (Hemiptera: Pseudococcidae) was collected in Hammam Sousse (Tunisia) on the ornamental plant *Cupressus macrocarpa* (Cupressaceae). The infestation was observed on needles which showed symptoms of desiccation and chlorosis. This is the first record of *P. vovae* in Tunisia and in North Africa. **[M. Ben Halima Kamel, L. Mdellel, S. Zouari and J. F. Germain (Tunisia), EPPO Bulletin, 2019].** https://doi.org/10.1111/epp.12561

RESEARCH HIGHLIGHTS

ALGERIA

Chemical Composition and Herbicidal Activity of Essential Oils from Two Labiatae Species from Algeria. The aim of the present study was the evaluation of the phytotoxic effect of essential oils (EOs) from two Labiatae species, namely *Thymus fontanesii* Boiss. et Reut. and *Satureja calamintha* subsp. *nepeta* Briq. On some of the most harmful weeds in Algeria (*Sinapis arvensis* L., *Avena fatua* L., *Sonchus oleraceus* L., *Xanthium strumarium* L. and *Cyperus rotundus* L.). EOs isolated by hydrodistilation were analyzed by gas chromatography-flame ionization detector (GC–FID) and GC-mass spectrometry (MS). Carvacrol (52.1%), thymol (13.3%), p-cymene (12.2%) and γ-terpinene (8.1%) were the dominant compounds in *T. fontanesii* EO, while 1.8-cineole (28.4%), pulegone (10.2%), menthone (9.7%) and isomenthone (9.6%) were the most important constituents of *S. calamintha* EO. The bio-assessments showed a wide herbicidal effect on seed germination (EOs at 0.01, 0.02 and 0.03%) and 3–4 leaf stage weeds (EOs at 1. 2 and 3%) due to the disruption of their physiological process. Based on our results, it can be concluded that the EOs could be exploited for weed biocontrol. [**Sara Benchaa, Mohamed Hazzit, Nadjia Zermane and Hacène Abdelkrim (Algeria), Journal of Esential Oil Research. Volume 31, Issue 4, 2019].** https://doi.org/10.1080/10412905.2019.1567400

Occurrence and Frequency of Spot form and Net form of net Blotch Disease of Barley in Algeria. In Algeria, barley (Hordeum vulgare L.) is the second most cultivated cereal after wheat; however, this crop is challenged by several foliar diseases. Net blotch is one of the most common diseases of barley in Algeria and is caused by the fungus *Pyrenophora teres* (Died.) Drechsler, which occurs in two forms: P. teres f. teres (Ptt), causing the net form (NFNB), and P. teres f. maculata (Ptm), causing the spot form (SFNB). Since the two forms are morphologically similar but genetically distinct, several PCR primer sets have been developed for their differentiation in the past. In this study, net blotch symptom types were monitored in 58 fields, through almost all cereal-growing areas in Algeria, then 212 P. teres mono-spore isolates were analyzed with respect to the occurrence of Ptt and Ptm by using two type-specific primer pairs. The results indicate that Ptt is the dominating type of net blotch in Algeria and was prevalent in almost all provinces surveyed, while Ptm was found less frequently. This is the first characterization of the Algerian net blotch population with the aim to distinguish both forms and, therefore, could contribute to a wider knowledge of the epidemics of this important plant pathogen**. [Hamama Iméne Lammari, Alexandra Rehfus, Gerd Stammler, Zine El Abidine Fellahi, Abdelkader Benbelkacem, Hamida Benslimane (Algeria), Journal of Plant Diseases and Protection,2019].** https://doi.org/10.1007/s41348-019-00278-w

Occurrence and Diversity of Grapevine leafroll associated virus 1 in Algeria. A survey was conducted of central and western Algerian grape cultivars and a germplasm collection to detect the presence of Grapevine

leafroll-associated virus 1 (GLRaV-1), using DAS-ELISA. The virus was found in 26 of 484 sample (5.4%). No infection was found in the germplasm collection. Analysis of the sequence of a coat protein gene region revealed that of the 17 recognised phylogenetic groups, the Algerian isolates belong to Groups I, II and XVI. This is the first study of genetic diversity of GLRaV-1 in Algeria. **[Arezki Lehad, Ilhem Selmi, Meriem Louanchi, Mouni Aitouada, Naima Mahfoudhi, (Algeria), Phytopathologia Mediterranea 58(2): 277-281,2019].**
doi: 10.14601/Phytopathol_ Mediter-10615

EGYPT

Morphological Identification of *Amphitetranychus* Species (Acari: Tetranychidae) with Crossbreeding, Esterase Zymograms and DNA Barcode Data. The genus *Amphitetranychus* Oudemans (Tetranychidae) consists of only three species, *A. quercivorus* (Ehara & Gotoh), *A. savenkoae* (Reck) and *A. viennensis* (Zacher). The original description of *A. savenkoae* was extremely simple and had no drawing of the aedeagus; however, a subsequent study described only the aedeagus. The present study investigated all three species in detail using a combination of morphological traits, crossbreeding experiments, esterase zymograms and the mitochondrial cytochrome c oxidase subunit I (COI) gene. Morphological differences in the peritremes and male aedeagi were observed among the three species. Complete reproductive isolation was confirmed in the reciprocal crosses between the morphologically similar *A. savenkoae* and *A. quercivorus* (no female offspring were produced). Esterase zymograms differed interspecifically, but not intraspecifically (among individuals in a given species). All three species formed clearly separate clades with 100% bootstrap values in the COI tree, and *A. savenkoae* was more closely related to *A. quercivorus* than to *A. viennensis*, which corresponded to the morphological similarity of their aedeagi and setal counts on tarsi IV. A key to *Amphitetranychus* species is provided. **[Tea Arabuli , Mohamed Waleed Negm , (Egypt), Tomoko Matsuda, Yasuki Kitashima, Tea Abramishvili, Igor Andrijovych Akimov, Olga Valentynivna Zhovnerchuk, Sergei Yakovlevich Popov, Tetsuo Gotoh , PLoS ONE 14(9): e0221951.2019**]. https://doi.org/10.1371/journal.pone.0221951

PALESTINE

Molecular Identification of Tomato Brown Rugose Fruit Virus in Tomato in Palestine. Tomato, a top cash crop, is infected by a number of viruses that cause drastic yield losses. Recently an unusual viral syndrome that resembled somewhat that induced by tobacco mosaic virus has been observed in Northern Palestine. The most affected tomatoes were of cultivars 'Ikram' and 'Azmeer'. A study aimed at revealing the cause of the disease, identified the presence of an apparently undescribed tobamovirus. The virus genome was entirely sequenced and shown to be composed of 6391 nucleotides. Sequence analysis indicated that this viruswas an isolate of tomato brown rugose fruit virus (TBRFV). This is the first time TBRFV was detected in Palestine on tomatoes and the name tomato brown rugose fruit virus Palestinian isolate (TBRFV-Ps) is suggested. Molecular tools were developed for specific detection of the virus and sanitary actions to protect tomato production from TBRFV were recommended. **[Raed Alkowni & Osama Alabdallah and Ziad Fadda (Palestine), Journal of Plant Pathology, 101: 719, 2019].**

LEBANON

Looking for Wild Plant Reservoirs and Potential Insect Vectors for '*Candidatus* Phytoplasma Solani' in "bois noir"-affected Vineyards in Bekaa Valley-Lebanon. "Bois noir" is a frequent grapevine yellows in the vineyards of Bekaa valley in Lebanon and is associated with '*Candidatus* Phytoplasma solani'. Genotyping through sequencing of the tuf gene and the variable gene stamp mainly revealed the presence of '*Ca.* P. solani' strains of genotype tuf-b1/ST14. The high incidence of the disease in two vineyard plots cultivar Chardonnay and the aggregation of "bois noir" cases suggested the establishment in the vineyard itself of reservoir plants and insect vectors. Survey of wild plant and potential planthopper vectors led to the detection the same genotype of '*Ca.* P. solani' in the field bindweed *Convolvulus arvensis* in the two vineyards as well as in several sites in the Bekaa valley and in *Hyalesthes obsoletus* populations collected on this plant species. These data suggest the local propagation of '*Ca.* P. solani' through a classical epidemiological cycle involving bindweed reservoir hosts and *H.*

obsoletus planthopper vectors. Surprisingly, a '*Ca.* P. omanense' -related strain was also detected in an old plantation of Syrah as well as in *C. arvensis* and two cixiid planthopper species**. [Elia Choueiri, Pascal Salar, Fouad Jreijiri, Samer Wakim, Jean-Luc Danet and Xavier Foissac (Lebanon), Phytopathogenic Mollicutes, Vol. 9 (1), 43-44, June, 2019].** doi: 10.5958/2249-4677.2019.00022.7

IRAQ

Genetic Diversity Study of *Fusarium culmorum*: Causal agent of Wheat Crown Rot in Iraq. Fusarium crown rot (FCR), caused by *Fusarium culmorum* (Wm.G.Sm) Sacc., is an important disease of wheat both in Iraq and other regions of wheat production worldwide. Changes in environmental conditions and cultural practices such as crop rotation generate stress on pathogen populations leading to the evolution of new strains that can tolerate more stressful environments. This study aimed to investigate the genetic diversity among isolates of F. culmorum in Iraq. Twenty-nine samples were collected from different regions of wheat cultivation in Iraq to investigate the pathogenicity and genetic diversity of F. culmorum using the repetitive extragenic palindromic (REP-PCR) technique. Among the 29 isolates of F. culmorum examined for pathogenicity, 96% were pathogenic to wheat at the seedling stage. The most aggressive isolate, from Baghdad, was IF 0021 at 0.890 on the FCR severity index. Three primer sets were used to assess the genotypic diversity via REP, ERIC and BOX elements. The amplicon sizes ranged from 200–800 bp for BOX-ERIC2, 110–1100 bp for ERIC-ERIC2 and 200–1300 bp for REP. A total of 410 markers were polymorphic, including 106 for BOX, 175 for ERIC and 129 for the REP. Genetic similarity was calculated by comparing markers according to minimum variance (Squared Euclidean). Clustering analysis generated two major groups, group 1 with two subgroups 1a and 1b with 5 and 12 isolates, respectively, and group 2 with two subgroups 2a and 2b with 3 and 9 isolates, respectively. This is the first study in this field that has been reported in Iraq. **[Oadi Matny, Sattar Shamsallah, Maadh Al Fahad, Matthew Haas (Iraq), Journal of Plant Protection Research, 59 (2), 2019].**

Insecticidal and Repellent Activities of Five Plant Extracts against Stored Grain Pest Tribolium Confusum (Jacquelin du duval), 1868 (Coleoptera: Tenebrionidae). The present research was carried out at the laboratory of plant pathology, Directorate of Diyala Agriculture during 2017 to evaluate the bioactivity of plant extracts *Moringa oleifera, Origanum majorana, Artemisia vulgaris, Trigonella foenum* and *Syzygium aromaticum* with three concentrations 10, 20, and 30 % against adults of *Tribolium confusum* under laboratory conditions. Two bioassays were conducted, the first to evaluate percentage of mortality and second to evaluate repellency percentage. *S. aromaticum* was recorded higher percentage of mortality 22.2% at 30% concentration after 3 and 4 days, maximum mortality was observed in *A. vulgaris* 46.6% and 60% at 10% concentration after 7 and 8 days respectively, whereas the average of mortality for plant extracts was higher in *A. vulgaris* 37.7% followed by *S. aromaticum* and *T. foenum* 33.3% with significant differences from control 0% after 8 days. *O. majorana* was recorded higher average of repellency percentage 46.6% after 10 minute ,maximum of repellency percentage was in *S. aromaticum* 66.6% at concentration10% whereas average of repellency percentage was higher in *S. aromaticum* 48.8% and *M. oleifera* 37.7% after 20 minute, while after 30 minute *M. oleifera* and *O. majorana* were recorded heights repellency percentage 73.3% and 66.6% at concentration30% respectively and *M. oleifera* was superior in the average of repellency percentage reached 51.1%. **[Hussein Ali Salim, Majida Hadi Mahdi, Dunia Ali Zedan and Balkees Othman Rosoki (Iraq), Journal of Physics: Conference Series, 2nd International Science Conference, 1294 092034.**

SYRIA

The Interaction between Fungus Glomus Mosseae and *Trichoderma Harzianum* in Induction of Systemic Resistance of Cucumber Plant toward *Alternaria alternate*. The reduction of chemical fungicides applications in agricultural production process is widely recommended; thus, the application of bioagents in disease control is increased tremendously. The current study aimed at investigating the role of both bioagnets Glomus mosseae (mycorrhizal fungi) and *Trichoderma harzianum* in protection of cuccmber plants against the fungal pathogen Alternaria alternate the causal agent of cucumber wilt disease. Results revealed the positive effect of bioagent treatments in reduction the pathogenic effect of A. alternata; as the disease severity Results also showed that G. mosseae and T. harizanum had a positive influence in reducing detrimental effect of A. alternat in all growth

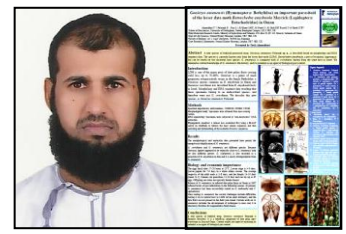
parameters (e.g. fresh and dry weight of root); as well as, on disease severity on cucumber plant caused by A. alternata. Bio-agents (G. mosseae, and T. harizanum) increased resistance in cucumber plants by raising production of enzymes catalase and peroxidase. This experiment was revealed that using a complex of bio-agent's factors were greatly increase the efficiency of biological control than using each of them individually. Results highlighted the effectiveness of recombination between two bioagents in controlling A. alternate pathogen on cucumber plants. **[Abdulnabi A.A. Matrood, Department of Plant Protection, College of Agriculture, University of Basrah, Iraq, and Mohammad Imad Khrieba, (Syria), 2019].** https://www.researchgate.net/publication/336084599_The_interaction_between_Fungus_Glomus_mosseae_and_Trichoderma_harzianum_in_induction_of_systemic_resistance_of_cucumber_plant_toward_Alternaria_alternata

PLANT PROTECTION NEWS IN THE ARAB AND NEAR EAST COUNTRIES

❖ Graduate Students Activities (Master and Doctorate Thesis)

Goniozus omanensis (Hymenoptera: Bethylidae) an Important Parasitoid of the Lesser Date moth *Batrachedra amydraula* Meyrick (Lepidoptera: Batachedridae) in Oman.

A new species of bethylid parasitoid wasp, *Goniozus omanensis* Polaszek sp. nov., is described based on morphology and DNA sequence data. The species is currently known only from the lesser date moth *Batrachedra amydraula*, a pest of economic importance, but can be reared on two factitious host species. *G. omanensis* is compared with *G. swirskiana*, known from the same host in Israel. We summarise current knowledge of *G. omanensis* life-history, and its potential as an agent of biological pest control. **[Polaszek A, Almandhari T(Oman-UK), Fusu L, Al-Khatri SAH (Oman), Al-Naabi S (Oman) , Al Shidi RH (Oman) , Russell S & Hardy ICW (Doctorate Candidate, 2019].**



Microbiological and Molecular Studies on Entomopathogenic Fungi and Its Application in Controlling Some Agricultural Pests.

The global consensus to decrease harmful agriculture pest population using biopesticide instead of chemical pesticides is highly developed during the last decades. Using fungi as a biological control agent represent powerful tools used in the management of a wide range of insects. Several studies have been done to improve the growth and sporulation of EPF with particular emphasis on *Metarhizium* spp. probably due to their eco-friendly characteristics. The local *Metarhizium anisopliae* AUMC 3262 strain may work as a potential biocontrol agent. Although it showed high efficacy against 2nd and 3rd larval instars of *S. littoralis*, *S. granarius* and O. *surinamensis*, this local strain needs further evaluation on large scale under field conditions. By comparing *M. anisopliae* AUMC 3262 with *M. brunneum* V275, *M. brunneum* ARSEF *4556* promising strains, it showed high stability after successive subculturing as the conidia can retain its virulence and viability for several generations. Also, it has the ability to be mass-produced using cheap agriculture grains byproduct, which offered high viable conidial yield, all of these criteria qualified *M. anisopliae* AUMC 3262 to make a way into IPM programmes. *M. anisopliae* AUMC 3262 can produce volatile organic compounds which may have a role in pathogenicity and infection strategy. **[Rana Hussien Mohamed Hussien (Egypt), Supervised by Prof. Dr. Ali Abdel Aziz El Sheikh- Agriculture Research Center and Prof. DR. Said Mohamed Ezzat, Faculty of Science- Zagazig University, Egypt, (Doctorate, 2019)].**

Effects of Environmental Contaminants on Gene Expression, DNA Methylation and Gut Microbiota in Buff-tailed Bumble bee - Bombus terrestris.

[Pshtiwan Bebane, Supervisor: Eamonn Mallon, Department of Genetics and Genome Biology, University of Leicester, (Erbil-Iraq), (Doctorate, 2019)].

Potency of Actinomycete Metabolites as Biocontrol Agents against Cotton Leafworm, *Spodoptera littoralis* (Boisduval).

Egyptian cotton leafworm, *Spodoptera littoralis* is a polyphagous cosmopolitan pest that attacks more than 112 economically host plants in Egypt causing large economic losses. It is currently controlled *via* the use of many agrochemicals, which have negative impacts on the ecosystem, human health; and thus alternative tactics are urgently needed. Recently, many reports demonstrated the potential of using actinomycete secondary metabolites as biological alternatives for controlling insect pests. The present study aims to investigate the efficiency of certain endophytic actinomycete secondary metabolites in controlling *S. littoralis.* Under laboratory conditions, the efficiency of ethyl acetate extracts of seventy endophytic actinomycete strains against laboratory and field cultures of *S. littoralis* (4^{th} instar) were tested; using leaf dipping technique. The selected strains were tested for production of chitina liase, amylase, indole acetic acid, phosphatase and siderophores. The promising strains were identified using standard microscopic and chemotaxonomy methods. The results indicated high potency for the crude metabolites of seven strains at concentration of 100 mg/ml that belonged to *Streptomyces* (2 strains), *Nocardioides* (2 strains), *Kitasatospora* (2 strains), *Pseudonocardia* (1 strain); and were originally recovered from the *Asteraceae* host plants *Seriphidium herba-album* and *Artemisia judaica* L. against *S. littoralis*. The bioactivity of the metabolic extracts ranged between direct toxicity on the 2^{nd} day of feeding on the laboratory strain to latent effects that appeared from the 6^{th} day on the field strain. The most potent metabolite extract belonged to the genus *Kitasatospora*. These caused substantial histopathological defects and reductions in lactate dehydrogenase activity in the treated larvae, comparable to the commercial actinobacterial insecticide Radiant 12% SC. TLC analysis confirmed distinct differences between the *Kitasatospora* strain ES2 crude metabolite extract and Radiant 12% SC, a type of spinosyn**. [Mohamed Khaled Ahmed Mohamed Diab(Egypt), Supervisors: Prof. Dr. Hala Mohamed Ibrahim Mead, Ass. Prof. Dr. Sahar Ahmed Hassan El-Shatoury, Pest Physiology Department, Plant Protection Research Institute, Agricultural Research Center, Egypt, (Master, 2019].**

Some Biological Aspects of Date Palm Dust mite *Oligonychus afrasiaticus* (McGregor) in Basra.

This study was conducted in the Department of Plant Protection / College of Agriculture / University of Basrah, with the aim of studying some biological aspects of the date palm dust mite *Oligonychus afrasiaticus* (McGregor). Samples of four date palm cultivars (Hillawi, Sayer, Khadrawi and Barhi) were collected from five different locations of Basra governorate (Abu Al-Khasib, Shatt Al-Arab, Qurna, Medina and Al-Hartha) during the agricultural season 2018. The results of the field study showed that the highest population of all dust mite stages (eggs, larvae, nymphs and adults) was in July, which were 712.18, 513.75, 489.23 and 327.45 mites / 10 fruits respectively. The results showed the absence of this pest in mid-November for all cultivars in all study locations. As for the numerical density of mites, the highest percentage of numerical density was recorded in Abu Al-Khaseeb location, which was186.79 mite/10 fruits, followed by the Shatt Al-Arab location (168.30 mites/10 fruits), while the lowest percentage was recorded in the Medaina which was 122.36 mites /10 fruits. Hillawi cultivar revealed the highest infestation percentage 38.44%, while the Sayer cultivar showed 13.9% the lowest infestation percentage. The results of pesticides screening covered 3 pesticide vs,ORTS SUPER , Matrixin Plus and LEVO, the highest mortality was recorded by ORTS SUPER, it was 69.63%, with significant difference to other pesticides, and the lowest mortality was 49.22% when using LEVO pesticide. As for dormant control results, it was observed that, the use of sulfur in 300 and 400 g/tree or Matrixin at 1.5 and 2 ml/L reduced the number of dust mites on treated palms with significant difference to other treatments. The reduction percentage ranged from 82 to 84%, while the lowest reduction was recorded in sulfur treatment at 200 g/tree (68%) and Matrixin oil at 1 ml/L (70%). During this study, two species of predatory mites were diagnosed, the first predatory mite *Spinibdella sp1* and the second predatory mite *Molothrignathus sp1.* For the study of biological aspects of palm dust mites in laboratory, which were reared on different parts of date palms (seed fruit at khalal stage, seedless fruits and leaflets) the results showed that, increase of the productivity of the female of dust mite that reared on the yellow khalal, it was 5.8 eggs/day compared to those reared on the seedless fruits and leaflet 4 and 3.8 eggs/day respectively. As for the effect of the use of some chemical pesticides on the different stages of the palm dust mite, the results showed that the pesticide Orts Super after 72 hours recorded the highest killing percentage of 82% with significant difference to other treatments, and the lowest killing percentage was recorded after12 hours from using of Confidor pesticide, it was

6.65 %. The results of biological enemy's predation on different stages of the palm dust mite showed that, *Molothrignathus* sp1 predatory was recorded the highest percentage of predation on the larvae of the dust mite; it was 12.33 larvae after three days, while the lowest percentage predation was recorded on adult stage after one day was 9.66 adults**.[Hazim Ali(Iraq), Department of Plant Protection / College of Agriculture / University of Basrah, Iraq. (Master, 2019)].**

Molecular and Biochemical Studies on the effect of Some Entophytic Fungi against Cotton Leafworm, *Spodoptera littorialis*, (Boisduval).

Endophytes are important source for the discovery of bioactive compounds. Fungal endophytes that colonize living, internal plant tissue without causing any apparent symptoms of infection or disease in the host known to confer their plant host resistance against insect herbivores. They protect their host from infection and adverse conditions by secreting bioactive secondary metabolites. In the search of novel bioactive fungi derived compounds for biological control applications, 26 endophytic fungal isolates were isolated from 14 plants in Egyptian flora and screened for their larvicidal activity against *S. littoralis* the 4th instar larvae, cotton leafworm as a destructive polyphagous and a model insect for Lepidoptera: Noctuidae insects. The most potent endophytic fungal isolates were identified as ***Sarocladium strictum*** EFBL 2019-1 and *A. nidulans* EFBL 2019-1based on morphological and molecular characteristics and submitted to gene bank with accession number accession # MK367604 and MK367603, respectively. These isolates were assessed for their EtOAc and DCM crude extracts adverse effect against *S. littoralis* 2nd instar larvae. Compounds present in four tested fungal extracts were analysed by using GC-MS that reveal presence of many bioactive secondary metabolites. The study extended to study biological and biochemical effects of *S. strictum* culture filtrate extracts on *S. littoralis*. The EtOAc extract of *S. strictum* exhibited the most potent larvicidal activity with LC_{50} value of 23.36 and 11.82 mg/mL when calculated after 3 day and 18 days post-treatment, respectively. In addition, all concentrations of four tested extracts high significantly prolonged larval duration. Results also, revealed that the tested extracts of *S. strictum* adversely affected different biological parameters and biochemical activities of *S. littoralis*, causing disturbances in proteins, carbohydrates, lipids and many enzymatic activities when compared to positive controls. Metabolites of *S. strictum* EtOAc extract were also tested against tomato plant for phytotoxicity. Finally, all results indicated that these endophytic fungi could be a potential ecofriendly source for bioactive metabolites with insecticidal activity and can be used in integrated pest management. [**Nahla Abd El Fatah Mohamed Fathy (Egypt), Faculty of Science, Zagazig University, Egypt. (Master, 2019)].**

Efficieny of Some Concentrations and Methods of treatment with *Ganoderma lucidum* and *Spirulina Platensis* Three Varieties of Maize against *Polerovirus Cereal Dwarf Virus.*

[Abdul Majeed Ahmed Mohammed Algthwan, Supervised by Prof. Dr. Maadh Abdulwahab Alfahad, Plant protection, College of Agriculture, University of Tikrite-Iraq. (Master, 2019)].

Thesis Abstracts of Arab and Near East Master Students Graduated From Mediterranean Agronomic Institute of Bari 2018-2019

Survey and Molecular Characterization of the main Honeybee Viruses in Apulia Region.

During the spring-summer 2019, the presence and prevalence of the *Black Queen Cell Virus* (BQCV), *Chronic Bee Paralysis Virus* (CBPV), *Deformed Wing Virus* (DWV), *Kashmir Bee Virus* (KBV), *Israeli Acute Paralysis Virus* (IAPV), *Lake Sinai Virus 1* (LSV1), *Lake Sinai Virus 2* (LSV2) and *Sacbrood Virus* (SBV) were investigated in 125 Apulian honeybee colonies. A total of 10 honey bees were sampled from each colony and were pooled as 1 sample, then analyzed by using Reverse Transcription Polymerase Chain Reaction (RT-PCR). The obtained RT-PCR results showed that the most prevalent virus was DWV, present in 88% of the tested samples, followed by CBPV, LSV1, LSV2, BQCV, and SBV (33%, 27%, 26%, 23%, and 10% respectively). Whereas, KBV and IAPV were not detected in any of the surveyed apiaries. Interestingly, most of the detected viruses were reported in multiple infections. The phylogenetic analyses of the detected viruses confirmed the high sequence identity at the nucleotide level with other isolates distributed worldwide. In addition, this study reports

the first detection of LSV1 and LSV2 in Apulia region, and the first molecular characterization of CBPV, LSV1, LSV2, BQCV and SBV in *Apis mellifera* colonies of this area. [**Meriem Ahdouga (Algeria), Supervisors: K. Djelouah, CIHEAM Bari, Italy and R. Abou Kubaa, IPSP-CNR Bari, Italy, MSc, Mediterranean Agronomic Institute of Bari, 2018-2019].**

Presence and Molecular Analyses of Newly Emerged Vitiviruses in Turkey.

Vitiviruses are associated with rugose wood complex diseases in grapevine. In the last two years, Vitivirus genus has gained new species, i.e. Grapevine virus E (GVE), GVF, GVG, GVH, GVI, GVJ, GVK, GVL, owing to the application of Next Generation Sequencing technology. Except GVA, GVB and GVD, there are no information about the presence of newly identified vitiviruses species in Turkey. Therefore, the newly identified vitiviruses were investigated in different Turkish vineyards and studied for their incidence, genome variability and genetic population structure. RT-PCR assays, using CP-specific primers for each species, were applied on 186 samples collected from different varieties and locations. Results showed that only GVE, GVF and GVL were present in the tested samples, with infection rates of 6.4%, 16.1% and 18.2%, respectively. The highest nucleotide (nt) sequence variations found in the genomic CP of GVE, GVF and GVL isolates, compared with those reported in the GenBank, were 23%, 13.91%, 14.2%, respectively; whereas the intra-variabilities found among the Turkish isolates were 0.9%, 7.9% and 3.7% for the three viruses, respectively. Constructed phylogenetic trees with GVE, GVF and GVL sequences of the CP gene allocated, in general, the Turkish isolates with those from Mediterranean origins. This is the first information on the presence and sequence variations of GVE, GVF and GVL in Turkey. **[Efecan Yazmiş (Turkey), Supervisors: Ç. ULUBAŞ SERÇE, Niğde Ömer Halisdemir University, Turkey, and T. Elbeaino, CIHEAM Bari, Italy, MSc, Mediterranean Agronomic Institute of Bari, 2018-2019].**

Evaluation of Weather-based Forecasting Models for *Monilinia fructicola* in Stone Fruits.

Prediction of disease outbreaks indirectly reduces the production costs and the impact of fungicides/pesticides on the environment. In this thesis, a multidisciplinary-approach was carried out to evaluate two weather-based disease risk forecasting models, Tate brown rot and *Monilinia fructicola* infection risk models, for the brown rot disease of stone fruits in 4 peach orchards in Maniace and Bronte of Sicily. An automatic weather-station (AWS) and 6 data loggers were used to monitor weather and microclimatic conditions, respectively. Burkard volumetric and plate gravitational spore traps were analysed by real-time LAMP to monitor the conidia presence. Culture collection of Monilinia isolates was characterised morphologically, identified molecularly, and used for the identification of symptomatic samples during the disease periodic monitoring. Isolates belonged to *M. fructicola, M. fructigena*, and *M. laxa* with high prevalence of the second. Burkard accuracy was compared to the gravitational trap, with 69 vs 66% and 91 vs 80% for the first and the second model, respectively. Generally, Tate brown rot model seemed less accurate than the *M. fructicola* infection risk model. Moreover, the low-cost gravitational trapping-system is a challenging candidate to replace the expensive AWS and Burkard trap for the evaluation of disease-forecasting models and recommendations are provided to increase its accuracy. **[Ahmed Elhussein Mohamed Fouad Mourad Hussein (Egypt), Supervisors: F. Santoro, F. Valentini and M. Gallo, CIHEAM Bari, Italy, MSc, Mediterranean Agronomic Institute of Bari, 2018-2019].**

New Approach for Controlling Red Palm Weevil through push-pull Strategy.

The Red Palm Weevil (RPW) *Rhynchophorus ferrugineus* is a destructive pest on palms and difficult to control. The pheromone and kairomone based traps are widely used in date growing countries for mass-trapping; however, they are found inadequate in controlling the weevil. Therefore, an improvement in semichemical based system is urgently needed. In this context, a push-pull strategy was investigated in two date palm grooves located in the Bahariya oasis, Giza. In this area, two grooves were selected, the first with high infestation with RPW (HIG); whereas, the second was low infested (LIG). The HIG consisted of two plots, both of them included traps in the borders. Only the treated plot includes two repellent formulation, solid and sprayable formulations. The LIG include the same type of plots, and a third one treated with only solid

repellent formulation. Interestingly, in HIG the number of trap catches was higher in treated plots comparing to the control plot. Nevertheless, statistical analysis showed no significance between treated and control plot results in both grooves. Beside this, the use of repellent seemed promising in enhancing trap catches, considering that the Egyptian farmers are willing to rationalize insecticides usage and substitute them with innovative and biological products. [**Ahmed Yehia Saad Oraby (Egypt), Supervisors: K. Djelouah, CIHEAM Bari, Italy, N. Hassan, Russel IPM, UK, Advisor: M.K .Abbas, ARC- Giza, Egypt, MSc, Mediterranean Agronomic Institute of Bari, 2018-2019].**

Development of Advanced and Innovative Diagnostic Assays for the Detection of *Xylella fastidiosa* in Plants and Insect-vectors.

Although DNA- and protein-based methods have revolutionized *Xylella fastidiosa* diagnosis, in some cases they are not very reliable due, on one hand, to the peculiarities of this pathogen, i.e. (i) irregular distribution inside the plant, (ii) xylem-limited localization making its extraction difficult, (iii) latency in some species that can affect accurate sampling; (iv) low concentration in some hosts; (v) genomic variance between subspecies; and, on the other hand, the poor performance of some serological and molecular techniques to sensitively and differentially detect and discriminate between subspecies and strains of *Xylella fastidiosa*. Accordingly, the aim of this study was to develop advanced serological (Nanobodies) and molecular (Real-time TaqMan PCR, LAMP and FTPS-LAMP) assays able to detect *Xylella fastidiosa*, especially the CoDiRO strain present in Apulia, in an easy, sensitive, accurate and discriminating manner. The hemagglutinin gene, found solely in the CoDiRO genome, together with two universal genes of *Xylella fastidiosa*, were used for the construction of protein- and DNA-based techniques, respectively. These three recombinant proteins were bacterially expressed, purified and quantified for future injections in rabbit and Llama for the production of polyclonal and monoclonal antibodies against *Xylella fastidiosa*. Real-time TaqMan PCR, LAMP and FTPS-LAMP assays here developed in singleplex and multiplex approaches were found highly sensitive, specific and discriminant to detect *Xylella fastidiosa* in infected plants and insect-vectors. **[Hiba Dakroub (Lebanon), Supervisors: T. Elbeaino, CIHEAM Bari, Italy and. Ch. Ritzenthale, CNRS Strasbourg, France, MSc, Mediterranean Agronomic Institute of Bari, 2018-2019].**

IAM-BARI NEW STUDENT GROUP ACADEMIC YEAR 2019-2020

A new group of 15 students from the Mediterranean region and another countries enrolled in the Diploma and Master program in the Mediterranean Agronomic Institute of Bari IAMB: Meriem Banouh, Mouna Djelloul Benelhadj, Ayoub Sefah (Algeria), Fatma Mohamed Emam Abdelmoaty, Salma Mostafa Anwar Fahmy (Egypt), Ilyas Byah, Sara Nouere (Morocco), Fatma Ezzahra Besbes, Ghada Chouk (Tunisia), Amer Adawi (Palestinian Territories), Razan Mohammad Hasan Qasqas (Jordan), Christine Bilen (Lebanon), Lulie Molla Desalegne (Ethiopia), Leyla Nur Korkmaz (Turkey), Mirela Toska (Albania). As in previous years, Dr. Ibrahim Al-Jboory, the president of the Arab Society for Plant Protection, participated in a course on Pests and their Control.This distinguished group showed a high level of interaction and proved themselves as successful future plant doctors.

All course participant expressed interest to become members of the Arab Society for Plant Protection society.

❖ Some Plant Protection Activities of FAO and Other Organizations

ACTIVITIES OF THE REGIONAL OFFICE OF FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS – NEAR EAST AND NORTH AFRICA

Advanced Training Course on Pest Risk Analysis in Khartoum, Sudan.

From 18 to 29 August 2019, FAO and Plant Protection Directorate, Ministry of Agriculture and Forestry organized advanced training in pest risk analysis. It was conducted under the capacity of '' Improving the implementation of sanitary and phytosanitary standards and norms for domestic animal and health in Sudan '' project. Fourteen technical staff members from different states were joined the training at plant protection directorate building, Khartoum. Mr. Ahmed Hussein Plant Protection Consultant, RNE coached the participants on pest risk initiation, assessment and management. The training involved theoretical and practical parts on data collection, validation and drawing the final conclusions. FAOR Mr. Babagana Ahmadu on his speech highlighted on the importance of applying PRA on import and export of plant commodities to protect the agriculture investments in Sudan from invasive pests and facilitate the market access of Sudanese plant products.

Regional Workshop for Near East and North African Countries by the International Plant Protection Convention, Beirut, Lebanon.

As a part of FAO and IPPC activities in Near East and North Africa (NENA) region, a regional workshop was organised in Beirut, Lebanon on 2-6 August 2019 to bring all representatives of the National Plant Protection Organisations (NPPOs). The workshop is annual opportunity to discuss about the main challenges that face phytosanitary authorities in the NENA countries, and suggest ideas for managing such challenges. Meanwhile, the meeting is a unique opportunity to updates member states on the current activities and achievements of IPPC and gather opinions from contacting parties on the activities including the standard setting and implementation and capacity development activities. In addition, the annual meeting is used itself as a tool for capacity development to train contact points on specific tools like Online Comment System (OCS) and National Reporting Obligation (NRO). Thirty-five representatives and observers from 16 IPPC contracting parties as well representatives from Regional Office for the Near East and North Africa Region of FAO (FAO-RNE), Near East Plant Protection Organization (NEPPO), Plant Production and Protection Division (AGP) of FAO, Arab Society for Plant Protection (ASPP), West Bank and Gaza Strip and IPPC Secretariat. The workshop was financially supported by IPPC Global Project on Capacity Development under the Framework of FAO-China South to South Cooperation

Training programme for pest control specialists in Saudi Arabia on monitoring, surveillance and management of Fall Armyworm, Taif, Saudi Arabia.

Food and Agriculture Organisation of the United Nations (FAO) has organised – in collaboration with Ministry of Environment, Water and Agriculture in Saudi Arabia, training programme on Fall Armyworm monitoring, surveillance and management. The training programme targeted plant protection specialists from different governorate, in addition to participants from the Ministry in Riyadh. The training programme has highlighted the essential information related to the pest biology, behaviour and damage, in addition to compiling ideas of participants into future vision on required measures to prevent the introduction and spread of FAW into Saudi Arabia territories. Also, the participants were introduced to FAO efforts in Africa to combat against FAW, and the activities performed by Ministry of Environment, Water and Agriculture to raise the awareness on FAW. The programme involved field training on scouting, monitoring and management of pheromone traps.

Training course on International Standards of Phytosanitary Measures, Khartoum, Sudan.

Food and Agriculture Organization of the United Nations (FAO), in collaboration with Ministry of Agriculture and Forestry (MoAF) in Sudan has organised a training workshop on the International Standards of Phytosanitary Measures ISPMs. The training took place in Khartoum, Sudan for 5 days between 13-17 October. The training workshop was organised as a part of ongoing project between MoAF and FAO to develop the capacity of governmental authorities and human resources on implementation of the international standards related to plant and animal health and food safety. The implementation of the international standards is among the essential requirements of Sanitary and Phytosanitary Agreement as an obligation to countries request to join the World Trade Organisation WTO. The Sudanese government has considered joining the WTO as one of the high priorities for Sudan foreign affairs, which will positively impact the Sudanese trade relations with the world and will assist in improving the market access of Sudanese agriculture products. In addition, joining the WTO will promote the foreign and domestic investments in agriculture production sectors. The training workshop covered some of the most important standards related to phytosanitary issues, like selection of regulated pests that are controlled on imported planting materials. Furthermore, the training will help to efficiently apply the international standards related to issuance of phytosanitary certificates, surveillance of pests, and quarantine inspection in entry points. Among the discussed topics will be the guidelines for sampling from agriculture commodities, laboratory testing principles and new technology in diagnosis of plant disease. The training course will improve the effectiveness of quarantine inspection and testing and will increase the international confidence in the plant quarantine regulations and measures applied in Sudan.

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

Activities of the Commission for Controlling the Desert Locust in the Central Region (CRC) Food and Agriculture Organization of the United Nation

DESERT LOCUST SITUATION

Warning level: THREAT

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

General Situation

Serious situation continues in eastern and central regions

The current situation remains serious and threatening along the Indo-Pakistan border and in the Horn of Africa. An increasing number of swarms formed during October in India and Pakistan where intensive control operations continued for a sixth consecutive month. It appears that some swarms have started to move west towards southwest Pakistan and southeast Iran where recent rains should allow them to survive until the spring. A few swarms may also reach northeast Oman on winds associated with Cyclone Kyarr in the first days of November. Ground and aerial operations were in progress in northeast Ethiopia where swarms formed. A few groups moved north towards Eritrea while some swarms moved southeast to northern Somalia and eastern Ethiopia where they laid eggs that began hatching at the end of the month. There remains a moderate risk that a few swarms could reach northeast Kenya. A few hopper bands and small swarms formed in breeding areas on the Red Sea coast in Yemen and adjacent areas in Saudi Arabia, and control was undertaken. Breeding will continue along both sides of the Red Sea, which could be supplemented by the arrival of a few small swarms on the Eritrean coast from Ethiopia, causing a further increase in locust numbers. In the Western Region, small-scale breeding occurred in Mauritania, Niger and southern Algeria, and isolated adults were present in Morocco and Libya. A few groups formed in northern Niger and limited control was carried out there and in Algeria. Locusts are expected to increase slightly in northwest Mauritania due to small-scale breeding.

Western Region: CALM

SITUATION. Small-scale breeding occurred in Mauritania and Niger (29 ha), extending to southern Algeria (15 ha). Groups formed in Niger. Isolated adults were present in Morocco and Libya. FORECAST. A few small groups may form in summer breeding areas of Mauritania and Niger as vegetation dries out. Small-scale breeding will cause locust numbers to increase in northwest Mauritania. Local breeding may occur in Algeria.

Central Region: THREAT

SITUATION. Swarms formed in Ethiopia (4 064 ha treated) and moved to east to lay eggs that hatched near northern Somalia where mature swarms were seen. A few groups formed from summer breeding in Sudan (3 025 ha treated). Breeding continued on the Red Sea coast in Yemen (32 ha treated) and Saudi Arabia (1 805 ha treated). Isolated adults were present in northern Oman. FORECAST. Breeding will continue on the Red Sea coast of Yemen, Saudi Arabia and Eritrea, and extend to Sudan. Small swarms may arrive in Eritrea and northern Somalia from Ethiopia and continue to southern Ethiopia and northeast Kenya. Breeding will cause hopper bands to form in some areas. A few small swarms could arrive in northeast Oman from Indo-Pakistan breeding areas during the first week of November.

Eastern Region: THREAT

SITUATION. Control operations continued in India (82 944 ha) and Pakistan (22 650 ha) against second-generation groups, bands and swarms. Isolated adults persisted in southern Iran. FORECAST. As vegetation dries, adult groups and small swarms will form along both sides of the Indo-Pakistan border and migrate to southwest Pakistan and southeast Iran where they are likely to remain and slowly mature in areas of recent rainfall.

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)

National Training Course on Desert Locust Survey and Control Operations–State of Kuwait

In collaboration with the Public Authority of Agriculture Affairs and Fish Resources (PAAF) in the State of Kuwait, the Commission for Controlling the Desert Locust in the Central Region (CRC) held a national training course in surveying and control operations in Abdali City, Kuwait from 17 to 21 November 2019. 19-plant protection specialist attended the training course from PAAF. The training covered the Desert Locust survey, information, reporting and used modern methods of control, including spraying ultra-low volume (ULV).

ARAB SOCIETY FOR PLANT PROTECTION NEWS

XIX INTERNATIONAL PLANT PROTECTION CONGRESS, IPPC-2019, HYDERABAD, INDIA

15 ARAB PLANT PROTECTION SCIENTISTS PARTICIPATED IN THE 19TH INTERNATIONAL PLANT PROTECTION CONGRESS, HYDERABAD, INDIA.

The 19th International Plant Protection Congress (IPPC 2019) was held during the period 10-14 November 2019 in Hyderabad, India. This event is held once every four years and organized by the International Association of Plant protection Sciences (IAPPS). The theme of the IPPC 2019 was "Crop Protection to Outsmart Climate Change for Food Security and Environmental Conservation'. Around 800 scientists from 57 countries covering the disciplines entomology, plant pathology and weed science participated in this event. 15 Arab scientists from Egypt, Iraq, Lebanon, Morocco, Saudi Arabia, Syria and Yemen participated in this congress. The scientific program of the congress included three plenary sessions with keynote speakers from around the world, 42 concurrent oral sessions, in addition to the presentation of 219 posters in several sessions. The venue for the congress was the Hyderabad Convention Center, a first-class spacious facility equipped with up-to-date data presentation equipment which made joining such congress a memorable experience. This congress was a great opportunity to discuss and disseminate recent advances in crop protection and establish contact and collaboration among crop protection scientists from different parts of the world. The next IPPC congress (20th IPPC) will be held in Athens, Greece during 2023.

RED PALM WEEVIL SYMPOSIUM: *OUTSMARTING THE RED PALM WEEVIL: A GLOBAL CHALLENGE*

The RPW Symposium during IPPC, 2019 was organized on the side lines of the Congress, held in Hyderabad, India during 10-14 November, 2019. In addition to a short introductory session, 11 presentations were made on diverse aspects of RPW in the technical session that followed**.**

The symposium was attended by about 30 participants from several countries including the Middle-East, Asia and the Oceanic region. There were 12 Arab participants from International organizations including FAO, ICARDA and the Arab society of Plant Protection, besides a strong Saudi Arabian delegation, from the Ministry of Environment Water and Agriculture, King Abdul Aziz City of Science & Technology, King Saud University, King Faisal University and the Palladium Group working on RPW in the Kingdom.
During the opening session, Dr. B. Sarath Babu, Co-chair IPPC, 2019 and member of the Symposium organizing committee, welcomed the participants and highlighted the importance of the Symposium. This was followed by a short address by Dr. Ibrahim Jboory, President of the Arab Society of Plant Protection, who highlighted the challenge of effectively combating RPW in spite of the resources (finance, technology, knowledge sharing platforms, etc.) being available. Further, Dr. Hassan Al-Ayedh, of King Abdul Aziz City of Science & Technology, Riyadh, Saudi Arabia and member of the Symposium organizing committee gave a brief overview of the current RPW situation. This was followed by a brief talk by Dr. Shoki Al-Dobai, from FAO-Rome and member of the Symposium organizing committee, who broadly highlighted the challenges faced by countries due to the RPW menace and the recent efforts by FAO in coordinating the collaborative efforts and commitments at the country, regional and global levels to stop the spread of this devastating pest.

The Technical session that followed was co-chaired by Dr Hassan Al-Ayedh, KACST, Riyadh, KSA and Dr Khaled Makkouk, Editor-in-Chief, Arab Journal of Plant Protection. In all, 11 papers will be presented covering diverse aspects of RPW-IPM including, early detection, advances in RPW semiochemical research, chemical control, pesticide resistance, socio-personal dimensions of RPW management, phytosanitary aspects and innovative area wide RPW-IPM strategy. The presentations made were as follows;

1	Red palm weevil, *Rhynchophorus ferrugineus* (Olivier), management: Is it working? ***-Abdulrahman S. Aldawood****, Khawaja G. Rasool and Mureed Husain*
2	Updates on Pesticide Resistance in Red Palm Weevils: Challenges, Management strategies and Future Research Directions ***-Hassan Al-Ayedh*** *and Abid Hussain*
3	Development of Date Palms Fumigation Technique for Controlling Red Palm Weevil Infestations in the Kingdom of Saudi Arabia ***-Ahmed Mohammed AlJabr,*** *Abid Hussain, Suliman Ali AlKhateeb, Abdulaziz Muhammad Abdullah Al-Shiridi and Mansour Abdulrahman Albulaikhi*
4	Innovative Program to Control Red Palm Weevil *Rhynchophorus ferrugineus* ***-Suliman Ali AlKhateeb,*** *Abdulaziz Muhammad Abdullah Al-Shiridi1, Mohammad alhamdan and Mansour Abdulrahman Albulaikhi*
5	Smart Vigilance and Stimulo-deterrence in the Bio-suppression of Red palm weevil infesting Coconut ***-Josephrajkumar, A.,*** *Chandrika Mohan, Jijo Paul, Regi J. Thomas, Vinayaka Hegde and V. Krishnakumar*
6	Socio- personal dimensions of red palm weevil management of coconut in homestead farming systems***-Anithakumari. P.****, V. Selvamani. K.P. Chandran. and K. Muralidharan*
7	Red Palm Weevil: A Global Overview ***-J. R. Faleiro***
8	Controlled release dispenser for delivery of red palm weevil, *Rhynchophorous ferrugineus* pheromone ***-Kesavan Subaharan****, M. Eswarmoorthy, Vibina Venugopal, N. Chalapathi Rao, S. Gurav, Srinivasan, S. Ganesan, N. Bakthavatsalam and P.S.P.V.Vidyasagar*
9	Enhanced vigilance, phytosanitation and enforcement of internal quarantine regulations to stop the spread of red palm weevil in the Near East and North Africa ***-Sarath Babu*** *Balijepalli and J. R. Faleiro*
10	Exploration of potential essential oil repellents against Red palm weevil *Rhynchophorus ferrugineus* Olivier (Curculionidae: Coleoptera) on coconut ***-Prathibha, P.S.,*** *P. Ravindran, A. Josephrajkumar, and K. Subaharan,*
11	Attract and Kill Technology for the Control of Red Palm Weevil ***-Markandeya Gorantla***

The Symposium was graciously supported by the Khalifa International Award for Date Palm and Agricultural Innovation (KIADPAI) and the Plant Protection Association of India (PPAI).

INTEGRATED MANAGEMENT OF THE CACTUS COCHINEALS, *DACTYLOPIUS* SPP. (HEMIPTERA: DACTYLOPIIDAE).

One of the symposia organized at the 2019 International Plant Protection Congress, Hyderabad India 11-14 November, was on Integrated Management of the cactus cochineals, *Dactylopius* spp. (Hemiptera: Dactylopiidae). This symposium was organized by **Dr. Mustapha El Bouhssini**, Principal entomologist at the International Center for Agricultural Research in the Dry Areas (ICARDA). There were 6 presentations at this symposium covering several aspects of management of the two cochineals, *Dactylopius opuntiae* and *Dactylopius coccus* (biological control, biopesticides, host plant resistance and IPM) with speakers from Morocco and Mexico. There was another presentation from South Africa on implications of biological control of cochineal insects for the control of invasive alien Cactaceae. The speaker here and that of the inviter paper in this symposium pointed out to the use of *Dactylopius opuntiae* as a biocontrol agent for the control of some of the invasive cactaceae in several countries such as South Africa and Kingdom of Saudi Arabia. The worry raised by the speaker from South Africa was about countries which are using introduced predators for the control of the cochineals. These natural enemies, if successful, might disperse to other neighbouring countries and wipe out the wild cochineal, *D. opuntiae*, and thus will not be available any more for use as a biocontrol agent to control invasive cactaceae. Probably the way out for this issue is to use only local natural enemies, in addition to other management options, to control *D. opuntia* in countries where this insect is a pest on cactus pear (*Opuntia ficus indica* L.).

THE AUSTRALASIAN PLANT PATHOLOGY SOCIETY CONFERENCE 2019

The Australasia Plant Pathology Conference was held in Melbourne, Australia during the period 25-28 November, 2019, on the occasion of the 50th Anniversary of the society. Around 480 participants from 27 countries joined the meeting, mostly from Australia, New Zealand and South East Asia countries. Presentations by graduate students constituted a good part of the scientific program, whether oral or poster presentations. It was evident that many of the presentations reflected on joint research projects implemented through research

collaboration, an important feature of advanced societies. Three scientists from Arab countries participated in this conference, namely: **Ramez Daoud (Syria), Safaa Kumari (Syria) and Khaled Makkouk (Lebanon).**

A LECTURE ON "PLANT PROTECTION GRADUATES BETWEEN HOPE FOR A DECENT LIFE OR UNEMPLOYMENT".

Dr. Ibrahim Al-Jboory, President of the Arab Society for Plant Protection, delivered a lecture on 26/11/2019 entitled "Plant Protection Graduates between Hope for a Decent Life or Unemployment" to the graduating class of the Plant Protection Department, Faculty of Agriculture, University of Jordan. Dr. Jboory presented opportunities to work in the private sector at the local and international levels. The lecture was attended by Dr. Luma Al-Banna, Head of the Department and Dr. Ahmad Katbeh and other staff members of the Department.



THE FALLARMY WORM: AN EMINENT THREAT TO CROPS IN THE ARAB REGION

Dr. Ibrahim Al-Jboory delivered also a lecture on 3/12/2019 entitled “The Fallarmy Worm: An Eminent Threat to Crops in The Arab Region” to students in of the Department of Plant Protection, Faculty of Agriculture, University of Jordan. The lecturer discussed the morphology, life cycle, host range and damage to crops, actions to be taken in case a new invasion of the pest occurs and control methods. A number of faculty members, graduate students and employees of the department attended the lecture.


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)

Organizing Committee

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

General Congress Program

The general congress program includes the following:

Sunday November 1, 2020	• Arrival and registration
Monday November 2, 2020	• Registration, opening session and a symposium in the morning and two oral concurrent sessions in the afternoon. • First poster session
Tuesday November 3, 2020	• 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	• Field trip
Thursday November 5, 2020	• 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	• 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	December 31,2019

For invited research sessions

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

KEYNOTE ADDRESS AND SYMPOSIA PROGRAM -13TH ACPP 2020, HAMMAMET, TUNISIA

Monday, November 2, 2020 (Opening Session)
Keynote address: Plant health and food security: the burden of pests on major food crops. Suggested speaker: Dr. Serge Savary, INRA, France.

Symposium I: Plant Health for Food Security and Safety (In celebration of the Plant Health Year 2020)

1- Plant health vision for the 21st century: new knowledge and approaches. Sophien Kamoun, The Sainsbury Laboratory, Norwich, UK.
2- Mycotoxins as a hidden threat for food and feed safety: risks and challenges. Dr. Antonio Logrieco, CNR, Bari, Italy.
3- Importance of compliance to international phytosanitary regulations for seeds and plants to enhance food security. Dr. Nico Horn, Director General, EPPO, Paris, France.
4- Conservation and use of global plant genetic resources for enhancing insect pests and disease resistance. Suggested speaker: Dr. Ahmed Amri, ICARDA, Rabat, Morocco.

Tuesday, November 3, 2020
Symposium II: Research and Innovation for Sustainable Crop Protection
1- Wheat stem rust: How to meet the challenges of a re-emerging threat to wheat production. Dr. D. Hodson, CIMMYT, Addis Ababa, Ethiopia.
2- The challenges of automatic counting and identification of insect threats using smart technology. Dr. James Bell, Rothamsted Experimental Station, UK.

3- Parasitoid pre-adaptation improves biological control of symbiont-protected aphids. Dr. Christoph Vorburger, EAWAG, Swiss Federal Institute of Aquatic Science and Technology and Institute of Integrative Biology, Switzerland.
4- How to cope with resistance to insecticides to improve pest management. Dr. Emanuele Mazzoni, Istituto di Entomologia e Patologia Vegetale, Universita Cattolica del Sacro Cuore, Italy.

Thursday, November 5, 2020
Symposium III: Advances in Molecular Plant Protection and its Applications in Pest Management
1- Molecular interaction between plants and beneficial microbes and its application on development of new bio-pesticides and bio-fertilizers. Dr. Mateo Lorito, University of Naples Federico II, Naples, Italy .
2- The use of RNA interference approach to protect agricultural crops against fungal pathogens. Dr. Mark Belmonte, University of Manitoba, Canada.
3- Metabolic approaches for citrus greening management. Dr. Nabil Killiny, University of Florida, USA
4-Moleular techniques for mites characterization and their use in the biological control of pests. Dr. Marie-Stephane Tixier, Montpellier SupAgro, France

Friday, November 6, 2020
Symposium IV: Application of Behavioral control Tools as a Safe and Effective Alternative in Pest Management
1- SPLAT semiochemical technology for behavioral manipulation of insect pests. Dr. Agenor Mafra-Neto, CEO of ISCA Technologies, Riverside, California, USA.
2- Manipulation of plant pests host-finding and acceptance behavior: Practical applications in IPM. Dr. Baldwyn Torto, ICIPE, Nairobi, Kenya.
3- Application of tritrophic interaction strategies in pest management systems. Dr. Stefano Colazza, University of Palermo, Palermo, Italy.
www.acpp-aspp.com, www.asplantprotection.org

ASPP MEMBERS NEWS ABROAD

Strategies for Integrated Pest Management Applications in Sustainable Agriculture

• The Inter-AFRICAN PHYTOSANITARY COUNCIL of the African Union AFRICAN UNION held two workshops entitled "Strategies for Integrated Pest Management Applications in Sustainable Agriculture" and "Raising Awareness to Support Safe Biological Control Elements" in Banjul, Republic of the GAMBIA from 19 to 21 & 22- 25 September 2019, respectively.

• The workshops were attended by representatives of 17 African countries. Each representative of the State made two presentations (one in each workshop) on the experiences of his country in the fields of the two workshops and the obstacles facing the applications.

• **Dr. Ahmed El Heneidy**, Professor of Biocontrol, Agricultural Research Center, **Egypt**, and an expert from ICIPE, Nairobi, Kenya (one of the largest research centers in the African continent) participated in two workshops by providing specialized lectures in each workshop.

• The recommendations of the two workshops concluded on the necessity of joint coordination and cooperation among African countries with common problems, especially with increasing threats from the invasion of serious new pests that threaten agricultural production in many African countries such as fruit flies, Tomato leaf miner and most recently the FAW.

12th Conference of the Arab Beekeepers Union 7-9 October 2019 Erbil, Kurdistan-Iraq

The 12th Conference of the Arab Beekeepers Association in cooperation with Kurdistan beekeepers was held between 7-9/October/2019 in Erbil International Fair in Iraq. More than 100 Companies were participated exhibiting beekeepers' materials and honey bees. A scientific program was organized and 27 scientific papers were presented besides 6 symposia on Bee viruses, using of organic materials to control Varroa mites, medical effect of bees and its poison, genetic heritage description of bees and artificial queens rearing. Many Arab Society for plant protection members attended the conference besides the society president Dr. Ibrahim Al-Jboory who encouraged the beekeepers to attend the ACPP conference in Tunisia 2020.

A Survey of the Egg Parasitoids of *Bagrada hilaris* in Pantelleria Island reveal the Lack of Specific Biological Control agents in the Island.

Bagrada hilaris (Burmeister) (Hemiptera: Pentatomidae), also known as a Painted bug, is a phytophagous insect, particularly dangerous to crops belonging to the *Brassica* genus. This pest is native to Asia and Africa, and recently introduced in the United States, Mexico, and Chile. In Europe this pest was reported in Pantelleria island (Italy) damaging an important local crop, the caper bush, *Capparis spinosa* L. The biological control of *B. hilaris* in its regions of origin is carried out by the egg parasitoids *Gryon gonikopalense*, *Trissolcus hyalipennis* and *Ooencyrtus* spp. In USA surveys of the parasitoids present in California carried out with sentinel eggs, revealed the presence of *Telenomus podisi*, *Tr. Hyalipennis*, *Tr. basalis* and *Ooencyrtus telenomicida* parasitizing *B. hilaris* eggs. In this study, for the first time, was carried out a survey of the possible presence of *B. hilaris* biological control agents in Pantelleria Island. To achieve this objective, fresh sentinel eggs were obtained from a colony of *B. hilaris* that established in the island for this purpose. Sentinel eggs consisted in eggs clusters (mean 13 ± 4) glued on paper dishes, placed on the caper bush plant base. Sentinel eggs were distributed from 1 to 15 October 2018 around the island in 27 zones in the infected or non- infected area. After 2-3 days, sentinel eggs were collected, and kept in the Petri dishes container until the evaluation of the parasitism by using the microscope after 10 or 15 days from collection. The results didn't indicate the presence of parasitism occurred on the *B. hilaris* eggs. The lack of parasitoids recorded in this experiment suggest that specific biological control agents of *B. hilaris* are missing in Pantelleria island and then their introduction for classical biological control purposes could be taken in account. This technique could be particularly recommendable in consideration of the isolated condition of Pantelleria and for the increasing demand of the caper growers to switch to organic farming methods. **[Mokhtar Abdulsattar Arif, (Iraq-Italy),Salvatore Guarino, Ezio Peri, and Stefano Colazza , Dipartimento di Scienze Agrarie, Alimentari e Forestali, Università degli Studi di Palermo, Viale delle Science Edificio 5, 90128, Palermo, Italy,2019].**

ASPP President Visit to the Unit of Bari of the Institute (CNR)

The president of the Arab Society for Plant Protection (ASPP) Dr. Ibrahim Al-Jboory paid a visit on October 22nd, 2019 to the Unit of Bari of the Institute for Sustainable Plant Protection (IPSP) of the National Research Council (CNR), Italy. Dr. Jboory introduced the society activities to the head of the unit Dr. Donato Boscia focusing on the publications of the ASPP and the coming 13th Arab Conference of Plant Protection which will be organized in Tunisia, Hammamet, November 1-6, 2020. Dr. Boscia highlighted the Institute's activities, in particular the researches running on *Xylella fastidiosa* within the two relevant projects funded by the European Union in the frame of the Program Horizon 2020:

(1) *Xylella Fastidiosa* Active Containment Through a multidisciplinary-Oriented Research **(XF-ACTORS)** project which aims to establish a multidisciplinary research program to answer the urgent need to improve prevention, early detection and control of *Xylella fastidiosa* **(Coordinator: Dr. Maria Saponari).**

(2) Pest Organisms Threatening Europe **(POnTE)** project which aims to minimize the risk of introduction/impact of emerging pests threatening EU agriculture and forestry **(Coordinator: Dr. Donato Boscia).**.

The Institute offers Technical and Advisory Services to the Ministry of Agriculture and Forestry and to Regional Phytosanitary Services. The Institute also offers training to phytosanitary officers, young graduates and extension by means of specific courses, seminars and guided visit to the Institute. Researchers of the Institute are involved in open laboratory activities for Public Agencies working in agriculture, High Schools, Associations of farmers, etc. The mission of the Institute is not only to identify and characterize plant pests and diseases, but also to provide sustainable and eco-friendly control strategies. Of particular relevance is the major involvement of the Institute in the research activities focusing on **the epidemic of *Xylella fastidiosa*** which has represented the first report of the establishment of this bacterium in Europe **and that is causing the severe decline of millions of olive trees in** Apulia Region **(Southern Italy)**. This disease poses a very serious threat and raises a lot of concern not only in the Apulia Region, but also in the whole Mediterranean basin.



Grapevine Pinot gris Virus Variants in Vines with Chlorotic Mottling and Leaf Deformation.

Grapevine Pinot gris virus (GPGV) was initially discovered in Trentino, Italy where it was associated with symptoms of chlorotic mottling and leaf deformation (GLMD). Then, this virus was reported in all the main grape growing areas worldwide (Saldarelli et al. 2017), which is an indication of the dissemination of uncontrolled propagation materials, likely favoured by the existence of GPGV variants not associated with disease symptoms (Saldarelli et al. 2015). Moreover, strong evidence exists that the virus is transmitted in the field by the mite Colomerus vitis (Pagenstecher 1857) (Malagnini et al. 2016). During a survey of a vineyard in Avellino, Campania, Italy a severe mite infestation was observed on vines of the cv. Falanghina. Vines were tested by RT-PCR for grapevine leafroll-associated virus 1, 2 and 3 (GLRaV-3), grapevine fanleaf virus (GFLV) and grapevine rupestris stem pitting-associated virus (GRSPaV) (Saldarelli et al. 2015), and by realtime RT-PCR for GPGV (http://sito.entecra.it/portale/cra_manuali_dettaglio.php?id_manuale= 23504&lingua=IT). GPGV was found in four out of 12 vines tested in single infection while one was co-infected with GLRaV-3. Four out of the five GPGV-positive vines showed GLMD symptoms and one was asymptomatic. In addition, GPGV was found in four out of 12 three-year-old vines of cv. Negramaro grafted on rootstock 1103P in a vineyard in Nardò, Lecce, Italy. The virus was present in multiple infection with GLRaV-3, GFLV and GRSPaV. GLMD symptoms were

observed in four out of five GPGV positive vines. Sequence analysis of two amplicons from Falanghina and one from Negramaro using DetF/DetR primers (Saldarelli et al. 2015) showed that all three GPGV isolates carried the distinctive C/T polymorphism in the movement protein gene and belonged to the phylogenetic group with asymptomatic isolates according to Saldarelli et al. (2015). The finding of asymptomatic GPGV variants was unexpected because most vines selected for this study manifested typical GLMD symptoms. This stresses the need to study the association of GPGV with symptoms, and cultivar susceptibility to GPGV infection. **[Monica Marra & Annalisa Giampetruzzi & Raied Abou Kubaa & Enrico de Lillo & Pasquale Saldarelli, Dipartimento di Scienze del Suolo della Pianta e degli Alimenti, Università degli Studi di Bari, Italy. CNR Istituto per la Protezione Sostenibile delle Piante, Bari, Italy. Journal of Plant Pathology, 22.10.2019.** https://doi.org/10.1007/s42161-019-00418-z

Ultra-Structural Alterations in *Botrytis cinerea*—The Causal Agent of Gray Mold—Treated with Salt Solutions.

Potassium bicarbonate (PB), calcium chelates (CCh), and sodium silicate (SSi) have been extensively used as antifungal generally recognized as safe (GRAS) compounds against plant pathogenic fungi. In this research, in *in vitro* tests, the radial growth, conidial germination, and germ tube elongation of *Botrytis cinerea* was completely inhibited at 0.3% of PB, SSi, and CCh. In *in vivo* tests, application of PB, SSi, and CCh completely inhibited the occurrence of gray mold incidence of inoculated 'Italia' grape berries at concentrations of 1.0, 0.8, and 0.8%, respectively. In order to investigate the detailed mechanisms by which salts exhibited antifungal activity, we analyzed their influence on morphological changes by scanning electron microscopy (SEM) and transmission electron microscopy (TEM) and also on reactive species of oxygen (ROS), mitochondrial membrane potential (MMP), and adenosine triphosphate (ATP) content. Defects such as malformation and excessive septation were detected on salt-treated hyphae morphology observed by SEM. The internal structure of conidia treated or not with salt solutions was examined by TEM. In treated conidia, most of the conidia were affected and cellular vacuolization and cytoplasmic disorganization was observed. For ROS accumulation, a higher increase was observed in fluorescent conidia in presence of PB, SSi, and CCh by 75, 68, and 70% as compared to control, respectively. MMP was significantly decreased after salt application indicating a loss of mitochondria function. Also, luminescence showed that *B. cinerea*-conidia treated with salts contained less ATP than the untreated conidia. The results obtained herein are a step towards a comprehensive understanding of the mode of action by which salts act as antifungal agents against *B. cinerea* **[Youssef Kamis, (Egypt-Brazil), Roberto S.R., de Oliveira A. G. ARC, Egypt; Londrina State University, Brazil, Plant Pathology Research Institute, Biomolecules, 9(10), 582,2019].** https://www.ncbi.nlm.nih.gov/pubmed/31597236

An A Virulent Strain of Soybean Mosaic Virus Reverses the Defensive Effect of Abscisic Acid in a Susceptible Soybean Cultivar.

In soybean cultivar L29, the *Rsv3* gene is responsible for extreme resistance (ER) against the soybean mosaic virus avirulent strain G5H, but is ineffective against the virulent strain G7H. Part of this ER is attributed to the rapid increase in abscisic acid (ABA) and callose, and to the rapid induction of several genes in the RNA-silencing pathway. Whether these two defence mechanisms are correlated or separated in the ER is unknown. Here, we found that ABA treatment of L29 plants increased the expression of several antiviral RNA-silencing genes as well as the *PP2C3a* gene, which was previously shown to increase callose accumulation; as a consequence, ABA increased the resistance of L29 plants to G7H. The effect of ABA treatment on these genes was weaker in the rsv3-null cultivar (Sumyungkung) than in L29. Besides, G5H-infection of Sumyungkung plants subverted the effect of ABA leading to reduced callose accumulation and decreased expression of several RNA-silencing genes, which resulted in increased susceptibility to G5H infection. ABA treatment, however, still induced some resistance to G7H in Sumyungkung, but only *AGO7b* was significantly induced. Our data suggest that *Rsv3* modulates the effect of ABA on these two resistance mechanisms, i.e., callose accumulation and the antiviral RNA-silencing pathway, and that in the absence of *Rsv3*, some strains can reverse the effect of ABA and thereby facilitate their replication and spread. [**Mazen Alazem (Syria-Koria), Kristin Whydiasari, Kook-Hyung Kim, Seoul National University, Seoul, South Korea, Published in Viruses Journal, Viruses 2019, 11(9), 879, 2019].** https://doi.org/10.3390/v11090879

A Co-Expression Network in Hexaploid Wheat Reveals Mostly Balanced Expression and Lack of Significant Gene Loss of Homeologous Meiotic Genes Upon Polyploidization.

Polyploidization has played an important role in plant evolution. However, upon polyploidization, the process of meiosis must adapt to ensure the proper segregation of increased numbers of chromosomes to produce balanced gametes. It has been suggested that meiotic gene (MG) duplicates return to a single copy following whole genome duplication to stabilize the polyploid genome. Therefore, upon the polyploidization of wheat, a hexaploid species with three related (homeologous) genomes, the stabilization process may have involved rapid changes in content and expression of MGs on homeologous chromosomes (homeologs). To examine this hypothesis, sets of candidate MGs were identified in wheat using co-expression network analysis and orthology informed approaches. In total, 130 RNA-Seq samples from a range of tissues including wheat meiotic anthers were used to define co-expressed modules of genes. Three modules were significantly correlated with meiotic tissue samples but not with other tissue types. These modules were enriched for GO terms related to cell cycle, DNA replication, and chromatin modification and contained orthologs of known MGs. Overall, 74.4% of genes within these meiosis-related modules had three homeologous copies which was similar to other tissue-related modules. Amongst wheat MGs identified by orthology, rather than co-expression, the majority (93.7%) were either retained in hexaploid wheat at the same number of copies (78.4%) or increased in copy number (15.3%) compared to ancestral wheat species. Furthermore, genes within meiosis-related modules showed more balanced expression levels between homeologs than genes in non-meiosis-related modules. Taken together, our results do not support extensive gene loss nor changes in homeolog expression of MGs upon wheat polyploidization. The construction of the MG co-expression network allowed identification of hub genes and provided key targets for future studies. **[Abdul Kader Alabdullah, (Syria-UK), Philippa Borrill, Azahara C. Martin1, Ricardo H. Ramirez-Gonzalez, Keywan Hassani-Pak, Cristobal Uauy, Peter Shaw and Graham Moore, John Innes Centre, Norwich Research Park, Norwich, United Kingdom, School of Biosciences, University of Birmingham, Birmingham, United Kingdom, Computational and Analytical Sciences, Rothamsted Research, Harpenden, United Kingdom, Frontiers in Plant Science 18 October 2019].** https://doi.org/10.3389/fpls.2019.01325

Dr Abdul Kader Alabdullah, John Innes Centre in the United Kingdom. His research interests focus mainly on wheat genetics. He is working on understanding the genetic mechanisms governing wheat yield components (specifically grain weight) and participated in identifying genes that control grain size. At the present, Dr Abdul Kader's research aims to understand the genetic basis of meiosis in wheat and to identify the genes responsible for the sensitive of meiosis to temperature stress (heat and cold stress). During his research he used bioinformatics to build a meiotic gene co-expression network that will contribute to the discovery of new meiotic genes in wheat.
Dr Abdul Kader Alabdullah (Syria-UK) got his PhD in Plant Protection (Plant Virology) from University of Bari Aldo Moro – Italy in 2008. Then he returned to his country to work as a lecturer at Aleppo University, Faculty of Technological Engineering – Department of Biotechnology until 2015. Due to the unstable situation in Syria, he was supported by the Council for At-Risk Academics (CARA) to continue his academic career in the United Kingdom. Dr Abdul Kader published several papers on plant viruses and plant genetics in different international peer-reviewed journals.

Investigation of Endophytic Bacteria from Different Olive Varieties in Apulia Region.

Xylella fastidiosa subsp. *pauca* ST53 is the causal agent of the Olive Quick Decline in Apulia region, whose control is still lacking. The primary aim of the ongoing research is therefore oriented to the control of the pathogen and its vectors. Olive varieties show a different susceptibility to Xylella infection which is also associated with the presence of resistance genes in those with mild or no symptoms. Recently, the study of plant microbiota has raised particular interest because of its influence on plant growth and health. Furthermore, promising results have been obtained using manipulated microbiota that can lead to the formulation of biocontrol products. The purpose of this study is therefore to isolate and characterize populations of endophytic bacteria in different varieties Apulian olive trees. In the period 2018 - 2019, seasonal sampling was carried out in the demarcated areas of Apulia region, choosing symptomless varieties of olive trees. Isolation of the bacterium was done from 2-3 years old twigs using the patented CIHEAM-IAMB method of

crude sap extraction (WO2017017555A1) and the direct print method. One hundred and twenty isolated endophytic bacteria were morphologically identified and biochemically characterized. Seventy isolates with morphological and biochemical differences were analyzed by PCR. The amplification of 16rRNA confirmed the variability of the endophytic bacterial population in different seasons and between different olive varieties. These preliminary results could lead to the identification of endophytic olive bacteria that may have a role of interaction with *Xylella fastidiosa* and the OQD disease. [**Arafat Hanani (Palestine-Italy), Franco Valentini, Giuseppe Cavallo, Anna Maria D'Onghia, Serena Minutillo, Walter Salvatore Davino,** Dr. Arafat Hanani is currently pursuing a PhD program in the University of Palermo (UNIPA), Italy in cooperation with the Mediterranean Agronomic Institute of Bari (CIHEAM - IAMB) in Italy. He presented a poster in the conference of Biocontrol which was held on 9-11 of July – 2019 at the University of Tuscia-Italy.

Seminar about IPM as a Holistic Solution for Urban Farming Pests

In preparation for a project between MAIB and World of Walas/ Farm2Future, Zilal Suleiman Alkadour, of Syrian nationality, urban farming specialist, World of Walas presented a seminar on IPM as a Holistic Solution for Urban Farming Pests. Mrs. Zilal focused on some solutions to face the increase of world population problems, she showed some urban farming types and the importance of IPM within our urban areas to insure healthy and sustainable food production. **[Zilal Suleiman Alkadour (Syria-Holand), 2019].**

5th International Agriculture Congress

The 5th International Agriculture Congress (5th IAC) was held in Istanbul, Turkey during the period 21-24 August 2019. The Conference aims to bring together academic scientists, researchers, research scholars and professionals, in order to exchange and share their experiences and research results related to Agriculture aspects. Around 200 participants from 22 countries attended the meeting. The congress program over a four-day period included one plenary session, 22 concurrent oral sessions including 200 presentations, and three poster sessions including 86 poster presentations. The Arab Society for Plant Protection was represented in this meeting by: **Dr. Emad Al-Maaroof, Dr. Asoda Nori and Dr. Abdulbasitt Abbas from Iraq and some other colleagues from Algeria, Tunisia, Morocco, Egypt and Saudi Arabia.**

Tomato Brown Rugose Fruit Disease: Current Distribution, Knowledge and Future Prospects.

Tomato is the most economically important fruit/vegetable crop grown worldwide. However, viral diseases remain an important factor limiting its productivity, with estimated quantitative and qualitative yield losses in tomato crops often reaching up to 100%. Many viruses infecting tomato have been reported, while new viral diseases have also emerged. The climatic changes the world is experiencing can be a contributing factor to the successful spread of newly emerging viruses, as well as the establishment of disease in areas that were previously either unfavourable or where the disease was absent. Because antiviral products are not available, strategies to mitigate viral diseases rely on genetic resistance/ tolerance to infection, control of vectors, improvement in crop hygiene, roguing of infected plants and seed certification. Tomato brown rugose fruit virus (ToBRFV) is an emerging viral threat to tomato productivity and is currently spreading into new areas, which is of great concern to the growing global production in the absence of mitigation measures. This review presents the current knowledge about ToBRFV and future prospects for an improved understanding of the virus, which will be needed to support effective control and mitigation of the impact it is likely to cause. [**J. O. Oladokun, M. H. Halabi (Syria-India), P. Barua and P. D. Nath, Department of Plant Pathology, Assam Agriculture University, Jorhat, 785013, India, Plant Pathology, 68, 1579–1586,2019].** Doi: 10.1111/ppa.13096

Powdery mildew and fungicide resistance: evaluation of *in-vivo* and *in-planta* bioassays.

Fungicide resistance in *Erysiphe necator*, the cause of powdery mildew of grapevines, is a significant issue for one of the most economically important diseases in Australian vineyards. The Demethylation Inhibitor fungicides (DMIs) are an important component of the powdery mildew management program, however, recent research revealed the presence of Y136F, the mutation associated with resistance, is widespread in Australian vineyards. A laboratory-based test, the heterologous yeast expression system (HYES), was used to better understand the variability among the DMI fungicides when exposed to *E. necator* with Y136F present. HYES results showed that the resistance factors (RF) varied from 1 (most effective) to 7.5 (least effective) for the six DMI fungicides. To validate these results *in-planta*, detached leaf and potted plant bio-assays were carried out. Plant material was sprayed with the various fungicides at either 1/10 or 1/100 label rate, and inoculated before or after application with spore suspensions of *E. necator* containing varying ratios of wild type:Y136F. The most consistant results with the best relationship to the laboratory HYES tests was acheived with 1/10 label rate applied before inoculation, with the lowest disease severity (0%) with difenoconazole with a RF of 1 and the highest (57%) with triadimenol with a RF of 7.5. Detached leaf assays enabled a higher level of replication, however the leaf tissue did not always survive for for the length of the test and also greater variability was observed. The bioassays using small potted vines resulted in greater consistancy than the detached leaf bio-assays, however the number of replicates was lower due to space requirements and it was often difficult to obtain enough inoculum for good levels of infection. Several techniques have been trialled and work is continuing to develop a more effective *in-planta* test system using small plants in closed containers.


AI for early onset powdery mildew diagnosis coming to your smartphone

New technology is being harnessed to allow grapegrowers to better assess the onset and spread of powdery mildew in their vineyard. Using the capabilities of a clip-on smartphone microscope, a new app, when developed, aims to provide a simple but effective diagnostic tool, reports Hans Mick.

Vini Clip System

[Ismail Ismail, (Iraq-Australia), McKay S.F., Hall B, Harper L, Lopez-Ruiz F. South Australian Research and Development Institute,Urrbrae, South Australia Centre for Crop and Disease Management, Curtin University, Perth, Western Australia,2019] Email: ismail.ismail@sa.gov.au

XYLELLA NEWS

Infections of the *Xylella fastidiosa* subsp. *pauca* Strain "De Donno" in Alfalfa (*Medicago sativa*) Elicits an Overactive Immune Response.

Diseases caused by *Xylella fastidiosa* are among the most destructive for several agricultural productions. A deadly disease of olive, termed olive quick decline syndrome, is one of the most recent examples of the severe impacts caused by the introduction and spread of this bacterium in new ecosystems with favorable epidemiological conditions. Deciphering the cascade of events leading to the development of severe alterations in the susceptible host plants is a priority of several research programs investigating strategies to mitigate the detrimental impacts of the infections. However, in the case of olives, the long latent period (>1 year) makes this pathosystem not amenable for such studies. We have inoculated alfalfa (*Medicago sativa*) with the olive-infecting strain "De Donno" isolated from a symptomatic olive in Apulia (Italy), and we demonstrated that this highly pathogenic strain causes an overactive reaction that ends up with the necrosis of the inoculated stem, a reaction that differs from the notoriously Alfalfa Dwarf disease, caused by *X. fastidiosa* strains isolated from grapes and almonds. RNASeq analysis showed that major plant immunity pathways are activated, in particular, several calcium transmembrane transporters and enzymes responsible for the production of reactive oxygen species (ROS). Signs of the necrotic reaction are anticipated by the upregulation of genes responsible for plant cell death and the hypersensitive reaction. Overall, the whole infection process takes four months in alfalfa, which makes this pathosystem suitable for studies involving either the plant response to the infection or the role of Xylella genes in the expression of symptoms. **[Raied Abou Kubaa, Annalisa Giampetruzzi, Giuseppe Altamura , Maria Saponari and Pasquale Saldarelli, CNR, Institute for Sustainable Plant Protection, Bari, Italy, Department of Soil Science, Plants and Foods, University of Bari, Italy, Plants 2019, 8, 335].** doi: 10.3390/plants8090335

Draft Genome Sequence Resources of Three Strains (TOS4, TOS5, and TOS14) of *Xylella fastidiosa* Infecting Different Host Plants in the Newly Discovered Outbreak in Tuscany, Italy.

An outbreak of *Xylella fastidiosa* was discovered in late 2018 in northern Italy affecting several plant species. Multilocus sequence typing analyses detected the presence of strains clustering in *X. fastidiosa* subsp. *multiplex* and harboring a hitherto uncharacterized sequence type, ST87. Three cultured strains (TOS4, TOS5, and TOS14) were subjected to high-throughput sequencing and the draft genomes assembled. Phylogenetic analysis conclusively indicated that they belong to the subspecies *multiplex*. The genetic information generated for these newly discovered strains further supports the evidence that sequence types are associated with the emergence of *X. fastidiosa* in Europe, posing major challenges for predicting the main threatened European and Mediterranean crops and plant species. **[Annalisa Giampetruzzi, Giusy D'Attoma, Stefania Zicca, Raied Abou Kubaa, Domenico Rizzo, Donato Boscia, Pasquale Saldarelli and Maria Saponari, Università degli Studi di Bari Aldo Moro, Bari, Italy, and Istituto per la Protezione Sostenibile delle Piante, CNRBari, Italy and Regione Toscana, Servizio Fitosanitario Regionale e di Vigilanza e Controllo Agroforestale, Firenze, Italy. Phytopathology 19 Jul 2019.]** https://doi.org/10.1094/PHYTO-04-19-0108-A

The Second International Conference on the *Xylella fastidiosa*, 29-30 October 2019, Ajaccio, Corsica, France

In collaboration with the European Food Safety Authority (EFSA), the French National Institute for Agricultural Research (INRA), the French Agency for Food, Health and Environmental Safety (ANSES) and the Los Angeles Cours Environment Office (OEC), in addition to all EU-funded projects: POnTE and XF-ACTORS, CURE-XF and EuroXanth; and the Euphresco Network for Phytosanitary Research and Financing, the Second International Conference on the *Xylella fastidiosa* was held from 29-30 October 2019 in Ajaccio, Corsica, France. Around 350 researchers and specialists in plant health from all over the world participated in various researches and intensive discussions on this disease, these researches included a map of the distribution of the disease around the world, methods of sampling from the field, methods of diagnosis of various genotypes of this bacterium linked to different host species, in addition to the latest researches carried out on vectors, including collection methods, diagnosis and various control methods. The presentations also focused on the available treatment methods currently available and sought to stop the spread of the disease and possibly eliminate it in the future. From the Arab countries, several contributions and researches were presented by a number of researchers and doctoral students working in this field, those included: from the Syrian/Italian side Dr. Raied Abou Kubaa participated in six different researches, from Lebanon Dr. Elia Choueiri and Dr. Michel Frem, presented one research/each, from the Tunisian side, Dr. Sonia Boukhris-Bouhachem and Dr. Nada Labib participated in three different topics, from the Egyptian side, Dr. Yosra Ahmed participated in one research, while, from the Jordanian side, Dr. Nehaya Al-Karablieh participated also in one research. The participation of Dr. El Hassan Achbani and Dr. Khaoula Habbadi from Morocco was also of great importance. It is worth mentioning that the participation of most Arab researchers in the conference was through CURE-XF project, a project managed by Dr. Maroun El Moujabber, from the Mediterranean Agronomic Institute of Bari, Italy.

List of research topica presented by Arab scientists:

- **Abou Kubaa R,** El Khoury Y, El Khoury R, Jreijiri F, Moussa Z, **Choueiri E.** Survey for Xylella fastidiosa and xylem-sap-feeders in Lebanon.
- **Abou Kubaa R**, Giampetruzzi A, Altamura G, Zicca S, Boscia D, Saponari M, Saldarelli P. Insights into differential responses of olive cultivars to *Xylella fastidiosa* infections.
- Saponari M, Altamura G, **Abou Kubaa R**, Montilon V, Saldarelli P, Specchia F, Palmisano F, Silletti MR, Pollastro P, Zicca S, Roseti V, Manco L, Boscia D. Further acquisition on the response of a large number of olive cultivars to infections caused by *Xylella fastidiosa* subsp. pauca, ST53.

- Baptista P, Cameirão C, Giampetruzzi A, Morelli M, **Abou Kubaa R**, Altamura G, D'Attoma G, Pereira JA, Lino Neto T, Sisto A, De Bellis P, Saldarelli P. Understanding the olive microbiome of susceptible and resistant cultivars for sustainable biocontrol.
- Loconsole G, Zicca S, Manco L, Altamura G, **Abou Kubaa R,** Potere O, EL Hatib O, Valentini F, Boscia D, Elicio V, Formica L, Savino VN, Saponari M. Implementation and validation of rapid diagnostic procedures for *Xylella fastidiosa.*
- Cavalieri V, **Abou Kubaa R**, **Boukhris-Bouhachem S**, Perovic T, Marra M, Dongiovanni C. Assessment of the genetic diversity in populations of Philaenus spumarius collected from different areas.
- **Ahmed Y,** Fathy A, Sabry, A, Mearaf B, Yaseen T, El Dobi S, El Kahky M, Hussien A. Survey for the presence of *Xylella fastidiosa* on olive plantations in the Siwa region, Egypt.
- **Frem M,** Chapman D, Fucilli V, Lanotte P, Choueiri E, Vitonicola S. Xylella fastidiosa: spread risk indicators, damaged landscape valuation and socioeconomic impacts.
- **Al-Karablieh N,** Abu-Obeid I, Waleed L, Haddadeen JJ, Al Jabaree AM. *Xylella fastidiosa* is not detected yet in Jordan.
- **Lahbib N, Boukhris-Bouhachem S,** Souissi R, Porcelli F. A survey of potential insect vectors of the bacterium *Xylella fastidiosa* in five regions of Tunisia.
- **Boukhris-Bouhachem S,** Souissi R, Porcelli F. Taxonomy and re-description of species within the genus Philaenus.

Capacity Building and Raising Awareness in Europe and in Third Countries to Cope with *Xylella fastidiosa*

Within the framework of the project: "Capacity Building and Raising Awareness in Europe and in Third Countries to Cope with *Xylella fastidiosa*" funded by H2020 Marie Curie, number 934313; and within the cooperation activities between MAI-BARI and Algeria and Palestine, Dr. Samer Jarrar from the Palestine Academy of Sciences and Technology, and Dr. Samia Laala, from the National High School of Agriculture, Algeria, visited MAI-Bari during December 2019 to get some updates about the recent methods of detecting and containing the disease. Their visit also included a field tour to the infected area with X.F in southern Italy accompanied by experts from Institute for Sustainable Agriculture and Plant Protection in Bari (CNR). Dr. Jarrar has also held several meetings with the project staff to schedule some activities to be implemented in the framework of the project for the benefit of Palestine. The picture shows Dr. Jarrar and Dr. Laala during the field visit accompanied by Dr. Donato Boscia, director of Bari unit (IPSP-CNR) and Dr. Federico Lanotte, expert from IPSP-CNR, Bari. **[Samer Jarrar (Palestine), Samia Laala (Algeria), 2019].**

General News

Conference of Plant Pathology (ACPP 2020) in September 2020, in Tsukuba, Japan.

The Phytopathological Society of Japan (PSJ) is going to host The Asian Conference of Plant Pathology (ACPP 2020) in September 2020, in Tsukuba, Japan. Year 2020 will be the International Year of Plant Health and the conference will be supported by the Asian Association of Societies for Plant Pathology, FAO, Ministry of Agriculture, Forestry and Fisheries of the Japanese Government, and etc. We are expecting many participants not only from Asian and Arabic countries but also worldwide.
Please stop by http://acpp2020.org to get further information on ACPP **2020.** The registration for presentations will open in coming December 2019. **[Tsutomu Arie, Japan, 2019]**

The Ninth Conference on Scientific Research in Jordan

Several faculty members and graduate students from Plant Protection Department, School of Agriculture, University of Jordan, participated in "The Ninth Conference on Scientific Research in Jordan". In the session of "Innovative Jordanian Agricultural Research", **Dr. Luma Al Banna** and Gharam Abu Jaleel presented a lecture entitled "Soil solarization for the control of agricultural soil pests: Jordanian innovative research". In the same session, Dr. Nida' Salem presented a research paper about "Discovery of a new plant virus threatening the world tomato Industry". The paper was part of the results of joint research with several local and international scientists (Dr. Akl Mansour, Dr. Bryce Falk, Dr. Massimo Turina, Dr. Rachid Tahzima). In the session of "Sustainable Agriculture and Food Security", the PhD. candidate, Zaid Nabas, and his supervisor Dr. Ahmad Katbeh presented a lecture entitled "Spatial and temporal distribution of *Empoasca* spp. (Hemiptera: Cicadellidae) in Jordan" which was part of a comprehensive survey for the Auchenorrhyncha of Jordan. This group of insects includes many species of plant hoppers that may be potential plant disease vectors such as *Xylella fastidieosa*, phytoplasma and/or viruses.

Training course for a PhD Candidate in UK

The Syrian PhD student Mohammed Hossam Halabi, who is currently doing his PhD at Assam Agricultural University, India, participated in a training course from 4-25 October 2019 held at the Environment and Food Research Agency (Fera Science Ltd) in the United Kingdom. Training included: methods of detection and diagnosis of samples sent to the plant health clinic using the recent methods and data analysis (Bioinformatics). The course was fully funded by the UK institution.

Congratulations for the Promotion of Dr. Luma Al-Banna

The faculty members at the Department of Plant Protection, Faculty of Agriculture, University of Jordan, congratulate their colleague, **Dr. Luma Al Banna**, for her promotion to the rank of full professor, which was on 5/11/2019. Dr. Al Banna presented for her promotion distinguished research papers published in refereed international journals. Some of her papers dealt with plant parasitic nematodes, integrated pest management in organic farming and effect of nanoparticles on soil microorganisms. Dr. Al Banna participated in workshops and conferences in plant protection, was active in developing the department and was devoted for helping and cooperating with the local community.

Renewal of accreditation of Plant Quarantine Pathogens laboratory- Egypt

The Plant Quarantine Pathogens Laboratory (PQPL) has been approved for accreditation of ISO 17025:2017 by the Egyptian Accreditation Council (EGAC). PQPL is a new lab established in 2018 to act as a reference laboratory for phytosanitary services in Egypt. The lab adopts the international standard methods and validated protocols for accurate detection of plant pathogens. PQPL was officially opened on the 10th February 2019 under the auspices of the Minister of Agriculture Prof. Dr. Ezzeldin Aboustit, and Prof. Dr. Mohamed Soliman President Agricultural Research center and Prof. Dr. Ashraf Al-Saeed Khalil Director of the Plant Pathology Research Institute. PQPL is the first laboratory in the Plant Pathology Research Institute to be accredited in the field of diagnosis of plant pathogens. Moreover, Prof. Dr. Ashraf Khalil the director of PPathRI stated that the accreditation of PQPL aimed to increase the reliability of the test results issued. Also to strengthen the Egyptian agricultural quarantine measures and to prevent the introduction of any harmful diseases that could threaten investments in the agriculture sector and reduce the effectiveness of national development programs. The lab activities include also the inspection of exports to ensure the good reputation of

the Egyptian products and increasing their access into the international markets. Dr. Yosra Ahmed, the technical manager of PQPL, said that the laboratory seeks to be a center of expertise in testing and diagnosis fields. The lab staff is keen to participate in international events in plant diseases diagnosis of plant diseases, the lab organizes many national and international training courses. The lab also cooperates with the European reference laboratory in France in developing new diagnostic methods with high accuracy and sensitivity for citrus quarantine

New Published Books 2019

Pythium: Diagnosis, Diseases and Management

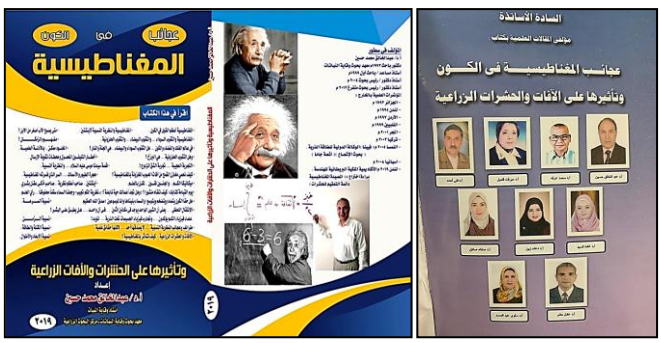
Damping-off caused by *Pythium* species: Disease profile and management

Pythium is one of the most important phytopathogens causing significant damage to agriculture, forest, and nurseries, etc. It is an unseen enemy of the root zone of various plants and hence considered as "hidden terror" for a number of plants. An accurate diagnosis and identification of *Pythium* causing various infections in plants is very important because it is often confused with several other fungi. Pythium infections are difficult to control once they have set in. Therefore, its effective and ecofriendly management is of paramount importance. In addition, there are many reports on *Pythium* causing infections in human beings and animals. The present book on Pythium focuses on various aspects, which mainly include pathogenesis, technological developments in detection and diagnosis, and its management.

[**Mohammad Imad Khrieba, Plant Pathology and Biological Control, National Commission of Biotechnology (NCBT), Damascus, Syria. Corresponding author: E-mail:** imadkhrieba@gmail.com

Wonderful Magnetism and its Effects on Agricultural Pests

This book was published in Egypt, 2019 by **Al Hussein** publishing press with a national number: n13882/ 2019 and was registered with an international number: 978977-90-6455-0. The book of 262 pages of medium size papers, focuses on "The effect of magnetic field power on the biological aspects of insects particularly their fertility and fecundity". The book includes an explanation about the nature of magnetism as an energy, and indicates its relations with the general power of attractions between the plants and stars in the whole universe, and how it plays the main role to the balance of galaxies in the universe. Really it is the poles and columns, which we can't see it as mentioned by (ALLAH) in the holly Quran. The book split to 3 Parties:



The First Part:

Includes an explanation for the recent atom theory and how it relates with the power of attraction and repulsion inside and between the Atom and atom particles. In addition, the book describes magnetic powers and their relations with Albert Einstein “relativity theory”, with an explanation for the new approach of the relative time, velocity, distance and a discussion around Quantum Mechanics. Furthermore, covers the different types of black and white holes in the whole universe.

The Second Part:

The book included in its second part a set of scientific articles and research published on the same subject by elite and a constellation of the participation of university professors and the Agricultural Research Center who contributed significantly to this book and scientific bodies participating are:

Plant Protection Research Institute, Animal Health Research Institute, ARC, Faculty of Agriculture, Cairo University, Faculty of Agriculture, Monofeya University, and Faculty of Engineering, Monofeya University. A large constellation of researchers of the Plant Protection Research Institute (PPRI) participated in this work. Also, it includes the formal patent “The permanent magnetic sterile insect device’ with the name of Abdel Khalek

Mohamed Hussein, no 1663/2018 (national patent) and (an international) patent no.PCT/EG22/2019 for the same name, who prepared the book. The Third Part included 12 published scientific papers indicates how the power of magnetic field affects negatively insect fertility and fecundity. Really some of university collages and research institutes participated the effort to published these papers. This is the first book deals with this important point in the field of pant protection and pest control

SELECTED RESEARCH PAPERS

- **Effect of NaCl on the Development of the Oil Palm Vascular Wilt Fungus, Fusarium Oxysporum f. sp. Elaeidis.** Jacques S. B. Dossa, Michaël Pernaci, Euloge C. Togbé, Euloge K. Agbossou, Bonaventure C. Ahohuendo, International Jornal of Phytopathology, Vol 8, No 1, 2019.

- **Potential of non-fumigant Nematicides at Different Formulations against Southern Root-knot Nematode (Meloidogyne incognita) on Tomato Plants.** Mohamed S. Khalil, Abdulqawi A. A. Alqadasi, International Jornal of Phytopathology, Vol 8, No 1,23-28, 2019.

- **Season-Long Monitoring of the Brown Marmorated Stink Bug (Hemiptera: Pentatomidae) Throughout the United States Using Commercially Available Traps and Lures.** Angelita L. Acebes-Doria, Arthur M. Agnello, Diane G. Alston, Heather Andrews, Elizabeth H. Beers, J. Christopher Bergh, Ric Bessin, Brett R. Blaauw, G. David Buntin, Eric C. Burkness, Shi Chen, , Ted E. Cottrell, , Kent M. Daane, , Lauren E. Fann, Shelby J. Fleischer, Christelle Guédot, Larry J. Gut, George C. Hamilton, Richard Hilton, Kim A. Hoelmer, William D. Hutchison, Peter Jentsch, Greg Krawczyk, Thomas P. Kuhar, , Jana C. Lee, , Joshua M. Milnes, , Anne L. Nielsen, , Dilani K. Patel, Brent D. Short, Ashfaq A. Sial, , Lori R. Spears, Kathy Tatman, Michael D. Toews, James D. Walgenbach, Celeste Welty, Nik G. Wiman, Janet van Zoeren, and Tracy C. Leskey. Journal of Economic Entomology, XX (XX), 1–13, 2019. doi: 10.1093/jee/toz240

- **First Record of the Madeira Mealybug, Phenacoccus Madeirensis Green (Hemiptera: Pseudococcidae), in Jordan.** A. Katbeh-Bader, I. J. Al-Jboory and M. Bora Kaydan (Jordan), Bulletin OEPP/EPPO Bulletin, 49 (2), 401–404, 2019.

- **Entomopathogenic Nematodes: can we use the Current knowledge on Belowground Multitrophic Interactions in Future Plant Protection Programmes? – Review**, Anamarija Jagodič, Stanislav Trdan, Žiga Laznik, https://doi.org/10.17221/24/2019-PPS

- **PM 7/91 (2) Fusarium Circinatum (formerlyGibberella circinata),** Bulletin OEPP/EPPO Bulletin 49(2), 228–247, 2019. https://onlinelibrary.wiley.com/doi/epdf/10.1111/epp.12587

- **Insect Food Products in the Western World: Assessing the Potential of a New 'Green' Marke.t.** C Matilda Collins, Pauline Vaskou, Yiannis Kountouris, Annals of the Entomological Society of America, saz015, 1-11,2019. doi: 10.1093/aesa/saz015

- **The Effects of the Neonicotinoid Imidacloprid on Gene Expression and DNA Methylation in the buff-tailed Bumblebee Bombus Terrestris.** P. S. A. Bebane, B. J. Hunt, M. Pegoraro, A. R. C Jones , H. Marshall, E. Rosato and E. B. Mallon, https://doi.org/10.1098/rspb.2019.0718

- **Temporal Changes in the Aphid–Natural Enemy Complex in Tunisian Citrus over Two Decades.** Fatma Behi, Rebha Souissi, Sonia Boukhris-Bouhachem, J. of Entomological Science, 54(4):357-369, 2019. https://doi.org/10.18474/JES18-97

- **Spatial and Temporal Genetic Diversity of the Peach Potato Aphid Myzus persicae (Sulzer) in Tunisia.** Amen Hlaoui ,Sonia Boukhris-Bouhachem ,Daniela A. Sepúlveda ,Margarita C.G. Correa,

Lucía M. Briones ,Rebha Souissi and Christian C. Figueroa, *Insects* **2019**, *10*(10), 330, 2019. https://doi.org/10.3390/insects10100330

PAPERS PUBLISHED IN THE ARAB JOURNAL OF PLANT PROTECTION (AJPP) VOLUME 37, ISSUE 3, SEPTEMBER 2019

ECOLOGY

Effect of some climate parameters on the population density of olive fruit fly *Bactrocera oleae* (Rossi, 1790) in Tartous Governorate, Syria.
R. Darwish, D. Nammour and A.Y. Ali (SYRIA), Pages 213-222 http://dx.doi.org/10.22268/AJPP-037.3.213222

ETIOLOGY

Characterization of three new strains of *Tomato yellow leaf curl virus* in Iraq
A.N. Al-Abedy, M.H. Karem and K.A. Al-Asade (IRAQ), Pages 223-231, http://dx.doi.org/10.22268/AJPP-037.3.223231

BIOLOGICAL CONTROL

The relationship between the olive fruit fly *Bactrocera oleae* Rossi and the predatory fly *Prolasioptera berlesiana* Paoli at an olive orchard in Quneitra governorate, Syria
A. Basher, F. Abdelrazak and A. Saleh (SYRIA), Pages 232-239, http://dx.doi.org/10.22268/AJPP-037.3.232239

A Biological study on native isolates of the fungus *Beauveria bassiana* (Balsamo) Vuill. at different constant temperatures and their effects on potato tuber moth, *Phthorimaea operculella* (Zeller) females
A.H. Al-Saoud (SYRIA), Pages 240-250, http://dx.doi.org/10.22268/AJPP-037.3.240250

Associated entomopathogens and parasitoids of palm rhinoceros beetle, *Oryctes* spp. (Coleoptera: Dynastidae) on date palm in Iraq
R.F. Al-Jassany and H.M.L. Al-Asaeedi (IRAQ), Pages 251-258, http://dx.doi.org/10.22268/AJPP-037.3.251258

CONTROL

Effect of some biological control agents **and their integration with Tachigaren fungicide for the control of Rhizoctonia rot on cucumber plants**
A.A.A. Al-Jbory, K.A. Mohamad and Z. Sh. Ahmed (IRAQ), Pages 259-265, http://dx.doi.org/10.22268/AJPP-037.3.259265

EXTENSION

Investigation of olive farmers' knowledge level about integrated pest management (IPM) techniques in Al-sheikh Badr district along the Syrian coast
L. Saker, M. Al-Abdulah and A. Basheer (SYRIA), Pages 266-272, http://dx.doi.org/10.22268/AJPP-037.3.266272

HOST RESISTANCE

Hydrogen peroxide effectiveness in enhancing resistance to tomato Fusarium wilt caused by *Fusarium oxtsporum*
H.H. Nawar, J.M. Abed, H.M. Abboud, M.D. Jumaa and A.M. Abdellatif (IRAQ), Pages 273-278, http://dx.doi.org/10.22268/AJPP-037.3.273278

Screening for susceptibility and tolerance to *Meloidogyne incognita* and *M. javanica* in okra cultivars in Iraq
B.H. Kandouh, A.E. Hasan, A.M. Abd-Al-Rasoul and B.S. Sipes (IRAQ & USA), Pages 279-285, http://dx.doi.org/10.22268/AJPP-037.3.279285

NEW RECORD

First report of the coccid *Microterys hortulanus* (Hymenoptera: Encyrtidae) in Syria
A.T. Saleh, A.M. Basheer and H.A. Alrouz (SYRIA), Pages 286-291, http://dx.doi.org/10.22268/AJPP-037.3.286291

PAPERS, WHICH WILL BE PUBLISHED IN THE ARAB JOURNAL OF PLANT PROTECTION (AJPP), VOLUME 37, ISSUE 4, DECEMBER 2019

- **Efficacy of the bacterium *Bacillus licheniformis* B307 as a biocontrol agent against tomato gray mold caused by *Botrytis cinerea*.** Y. Akeed, F. Atrash and W. Naffaa (SYRIA).
- **The morphological variation of *Myzus persicae* (Sulzer) on peach and tobacco in Syria.** Rasha Asaad, Loay Aslan, Husein Mahasneh and Abdelnebi Bashir (SYRIA).
- **Evaluation of four different methods of DNA extraction from wheat Weevil *Sitophilus granareuis*.** Zahra Ramadan, Ahmed Al-Lahem and Fadel Kaadeh (SYRIA).
- **Effect of coriander (*Coriandrum sativum*) extracts on growth of the photypathogenic fungi, Fusarium *oxysporum*, *Aspergillus* sp. and *Penicillium* sp.** Hala Ali Mohamed, Mohamed Abdelaziz and Rola Yakoub (SYRIA).
- **Genetic variability between *Fusarium* spp. isolates collected from Solanacious plants in Syria with emphasis on *F. oxysporum* infecting tomato.** Ahmad M. Mouhanna, Omar N. Hamoudi, Majeda M. Mofleh and Humam S. Barhoum (SYRIA).
- **Preference of different wheat varieties for egg laying of the wheat stem sawfly, *Cephus pygmaeus* L**. B. El-Sheikh, A.N. Treyssi, Z. Sheikh Khamis and M. El-Bouhssini (SYRIA & MOROCCO).
- **Effect of interaction among variety, planting date and plant density on incidence of luteoviruses naturally infecting chickpea in Al Ghab region of Syria.** N.Y. Asaad, S.G. Kumari, A. Haj Kaseem, S. Al-Chabi and A. Arab (SYRIA & LEBANON).
- **Population dynamics of *Dionconotus neglectus neglectus* (Fabricius) on onion in Syria.** Ali Yaseen Ali, Ahmed Ahmed, Jaafar Ammar and Rabeea Darwish (SYRIA).
- **The effect of Alpha- Cypermethrin Insecticide on the growth and reproduction organs of the Zebra males birds *Taeniopygia guttata*.** Joud Jamal, Ghalia Shaghouri and Mahmoud Kassem (SYRIA).
- **Effects of Alpha Cypermethrin on physico-chemical properties of water and the tissue structure of the cerebellum in *Taeniopygia guttata*.** Rama Attal, Ghalia Shaghouri and Mahmoud Kassem (SYRIA)

EVENTS OF INTEREST 2019-2020

3-6 OCTOBER, 2019	10th International Agriculture Symposium "AGROSYM 2019"- Bosnia & Herzegovina. http://agrosym.ues.rs.ba/index.php/en/
18-19 OCTOBER,2019	2nd European Plant Science Conference, Milan, Italy. https://www.meetingsint.com/agri-aqua-conferences/plant-science
29 - 30 OCTOBER, 2019	2ndEuropean conference on *Xylella fastidiosa*.Ajaccio, Corsica. https://events.efsa.europa.eu/event/ar/1/xylella-2019
3-6 NOVEMBER, 2019	7th International Cereal Nematodes Symposium which will take place in Delhi, India. https://www.cimmyt.org/events/7th-international-cereal-nematodes-symposium/
6-7 NOVEMBER, 2019	World Oilseeds Congress. Lviv, Ukraine. http://worldoilseed.org , http://oilseed.congress.gen.tr/

7-8 NOVEMBER, 2019	International Biological, Agricultural and Life Science Congress (BIALIC), Lviv, Ukraine www.bialic.org
10-14 NOVEMBER,2019	XIX International Plant Protection Congress, IPPC 2019, Hyderabad International Convention Centre, Hyderabad India. http://ippc2019.icrisat.org/index.php
16-20 JANUARY,2020	7th International Conference Phytopathology in Achieving UNSustainable Development Goals. New Delhi-India. http://ipsdis.org/gallery/view/35540
25-27 FEBRUARY,2020	International Conference On Plant, Cellular and Molecular Biology (Plant 2020) at Rome, Italy. https://www.plantconferences.com/
11-12 MARCH, 2020	Agri Seed Treatment Conference in Amsterdam, Netherlands. https://agriseedtreatment.com/
25-26 MARCH,2020	International Conference on Plant Biotechnology and Plant Tissue Culture" (ICPT 2020) at London, UK. https://planttissueculture.conferenceseries.com/
23-26 March 2020	6th International Symposium on Fusarium Head Blight, Banff, Canada http : //www.isfhb.com
16-19 JUNE, 2020	4th 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
15-18 September, 2020	Asian Conference on Plant Pathology 2020 in Tsukuba Science City, Japan. https://acpp2020.org/
1-6 NOVEMBER, 2020	The 13th Arab Congress of Plant Protection in Tunis (2020), Hammamat, Le Royal Hotel, Tunisia. www.acpp-aspp.com

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

Oadi Matny (Iraq), Mohamed W. Negm (Egypt), Mohammad Imad Khrieba(Syria), Mokhtar Abdulsattar Arif (Iraq-Italy), Tareq Almandhari (Oman), Luaay Kahtan Khalaf (Iraq), Mohamed Khaled Ahmed Mohamed Diab (Egypt), Hany M. El-Kawas (Egypt), Rana Hussien Mohamed Hussien (Egypt), Abdulnabi Mohamad Basheer(Syria), Hazim Ali(Iraq), Y. Guenaoui (Algeria), Elia Choueiri, Nabil Nemer(Lebanon), Fouad Jreijiri (Lebanon), Youssef Kamis, Roberto (Egypt-Brazil), Mazen Alazem (Syria-Koria), Abdul Kader Alabdullah(Syria-United Kingdom), Arafat Hanani(Palestine), Mahran Zeity(Syria), Hussein Ali Salim(Iraq), Nahla Abd El Fatah Mohamed Fathy(Egypt), Salwa Abd Samad (Egypt), Pshtiwan Bebane(Erbil-Iraq), Falerio Romino (India), Sarath Babu(India), Osama Alabdallah (Palestine), Zilal Suleiman Alkadou(Syria-Holand), Tsutomu Arie(Japan), Sonia Boukhris (Tunis), Emad Al-Maaroof (Iraq), Luma Al Banna(Jordan), Ismail Ibrahim (Jordan), Ahmad Katbeh(Jordan), Mohammed Hossam Halabi(Syria), Meriem Ahdouga (Algeria-Bari), Efecan Yazmiş (Turkey-Bari), Ahmed Elhussein Mohamed (Egypt-Bari), Ahmed Yehia Saad Oraby (Egypt-Bari), Hiba Dakroub (Lebanon-Bari), Nida Salim (Jordan), Ahmed Hussein El-Sayed (FAO-Egypt), Mamoon Alalawi (FAORNE), Lidia AbdelShahid, (FAORNE), Heba Tokali (FAORNE). Yosra Ahmed (Egypt), Samer Jarrar (Palestine), Samia Laala (Algeria), Abdul Majeed Ahmed Mohammed Algthwan(Iraq), Maadh Abdulwahab Alfahad (Iraq). Ismail Ismail (Iraq-Australia), Alaa Biltaji(Jordan).

On behalf of the Arab Society for Plant Protection, I would like to thank Dr. Raeid Abou Kubaa for his distinguished activities providing the newsletter with the news of the Arab scientists abroad.

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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