ARAB AND NEAR EAST PLANT PROTECTION NEWSLETTER

Food and Agriculture Organization of the United Nations

Number 77, August 2019

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).

ARAB AND NEAR EAST PLANT PROTECTION NEWSLETTER

Food and Agriculture Organization of the United Nations

Number 77 August, 2019

CONTENTS

Editorial- An Arab and Near East Surveillance System (ANESS) to Detect and Halt the Spread of Transboundary Crop Pests	**3**
CROP PROTECTION NEWS FROM ARAB AND NEAR EAST COUNTRIES	4
• **INVASIVE AND NEW PESTS**	4
• **RESEARCH HIGHLIGHTS**	6
PLANT PROTECTION NEWS IN THE ARAB COUNTRIES AND NEAR EAST	10
GRADUATE STUDENTS ACTIVITIES (MASTER AND DOCTORATE THESIS)	10
ACTIVITIES OF FAO REGIONAL OFFICE FOR NEAR EAST AND NORTH AFRICA (FAO-RNE)	14
TRAINING PROGRAM FOR THE ERADICATION OF RED PALM WEEVIL IN IRAQ	14
REGIONAL WORKSHOP: STRONGER CONTROL OF TRANSBOUNDARY ANIMAL AND PLANT DISEASES AND PESTS IN IRAQ AND SYRIA	15
REGIONAL WORKSHOP ON WATER HYACINTH MANAGEMENT AND CONTROL IN AL NAHR AL KABIR RIVER	16
ACTIVITIES OF PLANT PROTECTION IN FAO-UN AND OTHER ORGANIZATIONS - DESERT LOCUST SITUATION	17
ACTIVITIES OF FAO COMMISSION FOR CONTROLLING THE DESERT LOCUST IN THE CENTRAL REGION (CRC)	19
NEW POSITION - DR. SHOKI AL-DOBAI	19
ARAB SOCIETY FOR PLANT PROTECTION NEWS	**20**
THE 14TH IPVE SYMPOSIUM WAS HELD IN SEOUL, SOUTH KOREA DURING THE PERIOD 13-17 MAY, 2019	**20**
THE FOURTH INTERNATIONAL ARABIC IMPACT FACTOR CONFERENCE: CLASSIFICATION OF ARAB UNIVERSITIES	20
MEETING TASK FORCE MEMBERS INVOLVED IN "PLANT PROTECTION CHALLENGES IN THE ARAB COUNTRIES: 2050 VISION"	21
STRENGTHENING COLLABORATION BETWEEN ARAB AND EUROPEAN SCIENTISTS IN PLANT HEALTH ISSUES	**21**
FIRST ANNOUNCEMENT- 13TH ARAB CONGRESS OF PLANT PROTECTION	**22**
13TH ARAB CONGRESS OF PLANT PROTECTION, TUNISIA, 1-6 NOVEMBER 2020	**22**
KEYNOTE ADDRESS AND SYMPOSIA PROGRAM-13TH ARAB CONGRESS OF PLANT PROTECTION, TUNISIA 2020	**25**
ASPP MEMBERS NEWS ABROAD	26
XYLELLA NEWS	**31**
A REGIONAL TRAINING COURSE ON THE BACTERIUM XYLELLA FASTIDIOSA, THE CAUSAL AGENT OF OLIVE DECLINE DISEASE.	31
RESEARCHERS TEAM PERFORMING FIELD SURVEYS ON OLIVE TREES AND OTHER HOST SPECIES IN LEBANON	32
SAVING MEDITERRANEAN OLIVES FROM A DESTRUCTIVE DISEASE	32
GENERAL NEWS	**34**
NEW PUBLISHED BOOKS: FOURTH INTERNATIONAL SYMPOSIUM ON BIOLOGICAL CONTROL OF BACTERIAL PLANT DISEASES	35
SELECTED RESEARCH PAPERS	**36**
PAPERS PUBLISHED IN THE ARAB JOURNAL OF PLANT PROTECTION (AJPP) VOLUME 37, ISSUE 2, JUNE 2019	**36**
PAPERS, WHICH WILL BE PUBLISHED IN THE ARAB JOURNAL OF PLANT PROTECTION (AJPP), VOLUME 37, ISSUE 3, SEPTEMBER 2019	**39**
EVENTS OF INTEREST 2019-2020	**40**

EDITORIAL

An Arab and Near East Surveillance System (ANESS) to Detect and Halt the Spread of Transboundary Crop Pests

Over the past few decades, a number of crop pests were introduced to the Arab and Near East region causing serious damage and significantly affected food production and security. The red palm weevil which at present attacks date palms in many date production countries is a good example. Other pests which emerged recently in neighboring regions could easily spread into our region and cause significant food losses, such as the olive quick decline syndrome (OQDS) caused by *Xylella fastidiosa* and the fall armyworm *Spodoptera frugiperda* which attacks many crops. Climate change and global trade are likely to drive the spread, emergence and re-emergence of crop pests, and containment action in our region is often inefficient.

A recent scientific meeting was held at the Rockefeller Foundation's Bellagio Center in Italy, convened by the International Center for Tropical Agriculture (CIAT) in 2018 to discuss the establishment of a global surveillance system (GSS) for crop diseases. The discussed proposal gave priority for six major food crops—maize, potato, cassava, rice, beans and wheat. The main objective of the discussed proposal is to strengthen and interconnect crop biosecurity systems to improve global food security.

To enhance collaboration in the management of emerging crop pests spread in our region, the Arab Society for Plant Protection (ASPP) is proposing to start a dialogue about the possibility of establishing an Arab and Near East Surveillance System (ANESS) to detect and halt the spread of emerging crop pests. To discuss the proposal, ASPP will provide a platform by organizing a special session within the scientific program of the 13th Arab Congress of Plant Protection (ACPP) which will be held in Hammamet, Tunisia during November 1st to 6th 2020 to discuss the proposal. The Near East Regional Office of FAO (FAO-RNE) and the Near East Plant Protection Organization (NEPPO) in addition to International Agriculture Centers active in this region are all invited to join the event. This will be an opportunity for all parties or individuals interested in the proposal to participate in the debate.

It is anticipated that the proposal will attract researchers, phytosanitary personnel, extension workers and international research and funding organizations that work on plant health issues. The main objective of the proposal is to develop a framework on how to strengthen diagnostic capacity, information sharing, and the communication channels that are weakly established in some Arab and Near East countries. The proposal can tap into cutting edge technology for rapid pest diagnosis and take advantage of communication networks, including social media. The proposed ANESS could be an active partner in the proposed global GSS proposal in an effort to enhance global cooperation in plant health issues that eventually improve global food security. For more information on the GSS proposal, readers are advised to read a recent article in Science by Carvajal-Yepes et al. in June, 2019 (364:1237-1239).

Khaled Makkouk and Ibrahim Jboory
Arab Society for Plant Protection

❖ Crop Protection News from Arab and Near East Countries

INVASIVE AND NEW PESTS

ALGERIA

First Detection of a Virulent Strain of *Citrus tristeza virus* (Closteroviridae) in a Citrus Orchard of Chlef Valley (Algeria). A large-scale survey of *Citrus tristeza virus* (CTV) was carried out from 2016 to 2018 in the Chlef Valley, one of the main citrus growing areas in Algeria. In this study a total of 1680 citrus trees from 93 commercial orchards were sampled. The collected samples were tested by direct tissue blot immunoassay analysis and by the double antibody sandwich enzyme-linked immunosorbent assay technique, and 54 trees were identified as being infected with CTV. This result confirmed that 54 trees were infected by the virus, corresponding to an infection rate of 3.21% throughout the studied area. Five of these local CTV sources were chosen for further molecular investigations to determine the genotype associated with the CTV isolates now spreading in the Chlef area. Characterization with multiple molecular markers showed the presence of the T30 and VT genotypes. This result allowed confirmation of the presence of a virulent strain belonging to the VT genotype. The other CTV isolates were similar to those from the Mitidja region, which showed 99% nucleotide identity with the Spanish mild CTV isolate. This early finding of a strain belonging to the VT genotype is an issue for Algerian citrus producers and needs rapid actions to be taken by the National phytosanitary services, extending the surveillance to other citrus production regions and uprooting the infected trees. **[S. Ali Arous, Y. Guenaoui, M. I. Drais and K. Djelouah (Algeria), Bulletin OEPP/EPPO Bulletin, 0 (0), 1–6, 2019].** https://doi.org/10.1111/epp.12563

IRAQ

New Record of Species *Chrysoperla furcifera* Okamoto 1914 (Neuroptera: Chrysopidae: Chrysopinae) in the Meddle of Iraq. New record a species *Chrysoperla furcifera* Okamoto 1914 of the genus *Chrysoperla* Steinmann 1964 belongs to subfamily Chrysopinae and to the Family Chrysopidae (lacewing) and to the suborder of Hemerobiiformia of the order Neuroptera, the insect samples were collected from Baghdad and Babylon provinces during 2017 – 2018. The insects were identified based on morphological characters and male/female genitalia. The measurements were taken by ruler and the digital image analysis program (Image J), drawing body parts by camera Lucida and pictured by digital camera.[**Worood Ramzi Akram and Awatif Abdul-Fatah Hamodi (Iraq), Department of Plant Protection, College of Agriculture, Baghdad University/ Baghdad-Iraq, Plant Archives, Vol. 19, No.2, October, 2019].**

JORDAN

First Record of the Madeira Mealybug, Phenacoccus Madeirensis Green (Hemiptera: Pseudococcidae), in Jordan. The Madeira mealybug, *Phenacoccus madeirensis* (Hemiptera: Pseudococcidae), is recorded from Jordan for the first time. Specimens were collected from heavily infested ornamental geranium plants, *Pelargonium sp.* (Geraniaceae), *Chrysanthemum sp*. (Asteroideae), *Hibiscus rosa-sinensis* L. (Malvaceae), Kalanchoe blossfeldiana Poellnitz (Crassulaceae) and basil, *Ocimum basilicum* L. (Lamiaceae). In addition, this mealybug was taken from infested leaves of cherry tomato, *Solanum lycopersicum* L., and sweet pepper, *Capsicum annuum* L. (Solanaceae). *Kalanchoe blossfeldiana* is recorded as a new host for *P. madeirensis*. Slide mounts were prepared, and voucher specimens were preserved at the University of Jordan Insect Museum. An urgent survey should be initiated to determine the current distribution of the pest in Jordan. Inspection of ornamental nurseries should be given priority and plant protection officials should pay particular attention to this serious pest. [**A. Katbeh-Bader, I. J. Al-Jboory and M. Bora Kaydan (Jordan), Bulletin OEPP/EPPO Bulletin, 0 (0), 1–4, 2019].** DOI: 10.1111/epp.12579

SYRIA

The First Record of some Predatory Insects on Citricola Scale *Coccus pseudomagnoliarum* (Kuwana). Some predatory insects were recorded for the first time on Citricola scale *Coccus pseudomagnoliarum* (Kuwana) in Lattakian citrus orchards (Syria). The predatory are: *Cybocephalus fodori* Endrody-Younga, 1965, (Coleoptera: Cybocephalidae); *Cardiastethus nazarenus* (Reuter), (Hemiptera: Anthocoridae); Geocoris ochropterus (Fieber) (Hemiptera: Geocoridae); *Conwentzia pineticola* (Enderlein) and *Coniopteryx borealis* (Tjeder), (Neuroptera: Coniopterygidae); *Karnyothrips flavipes* (Jones), (Thysanoptera: Phlaeothripidae) and *Eublemma scitula* (Rambur) = *Coccidiphaga scitula* (Rambur), (Lepidoptera: Noctuidae). [**Abdulnabi Mohamad Basheer, Alaa Turkey Saleh (Syria), Biological Control Studies and Research Center, Faculty of Agriculture, Damascus University, 2019] .**

New Species of the Darkling Beetles (Coleoptera: Tenebrionidae) in Syria.

Darkling beetles (Coleoptera: Tenebrionidae) are a diverse group, comprising over 15,000 species worldwide and inhabiting a wide range of habitats including deserts, sand dunes, caves, and woodlands. New species of the darkling beetles were recorded in different area of Syria (Damascus, Damascus countryside, Homs and Daraa). It is *Pimelia angusticollis* Solier, 1836, subfamily Pimeliinae. The beetle is a convex shaped, length 15-17 mm. The elytron contains granulations. The granulations are divided into curved lines. **[Abdulnabi Basheer, Zakaria Al-Nasser, Alaa Saleh (Syria), Biological Control Studies and Research Center, Faculty of Agriculture, Damascus University, 2019].**

***Eutetranychus palmatus* Attiah, 1967 (Acari: Tetranychidae), A Newly Recorded Spider Mite Pest of Date Palm from Syria.** Male and female specimens of spider mites were collected from the date palm *Phoenix dactylifera* and pygmy palms *Phoenix roebelinii*. The collected materials were mounted using Hoyer's medium and examined under research microscope. Mite samples were identified as *Eutetranychus palmatus.* Prior to this study, only one species under this genus, *Eutetranychus orientalis* was reported on citrus of Latakia, Syria. This is a new recorde of this species on date palm and pygmy palms (as new host record) from Syria. Females and males were briefly described and illustrated **[Mahran Zeity (Syria) and Negm M. W. (Eygpt), Persian Journal of Acarology, 8(2): 111-114, 2019].**

Updated Contribution to the Knowledge of Tetranychoidea (Acari: Tetranychidae, Tenuipalpidae) from Syria with Reinstatement of Genus Nuciforaella Vacante. Sixteen species of Tetranychoidea, 11 Tetranychidae and 5 Tenuipalpidae are reported in this study. Seven of them are recorded for the first time from Syria: *Bryobia gigas, Oligonychus afrasiaticus, O. coniferarum, O. pratensis, Cenopalpus rubusi, Tenuipalpus cupressoides* and *T. punicae*. New host plant records are also reported. Reinstatement of the genus Nuciforaella Vacante is discussed in this study. Detailed descriptions of immature stages and females of *Nuciforaella nikitensis* have been given. A key to the known species of the family Tetranychidae from Syria is provided **[Mahran Zeity (Syria), and Nagappa Srinivasa (India), Systematic & Applied Acarology, 24(4): 529–543, 2019].** http://doi.org/10.11158/saa.24.4.1

First Record of Cherry Slug *Caliroa cerasi* (Linnaeus 1758) (Hymenoptera: Tenthredinidae) on the Cherry in the Town of Hadar, Quneitra Province, Syria. The symptoms of the infestations were observed on various cherry varieties in cherry orchards in the Hadar area between May and August 2019. Caterpillars are yellow-green, 9-11 mm in size, with 10 pairs of legs, the head is black, small; the anterior body part is flattened, and the body is covered with black slime. During individual development, the caterpillar molts 5-7 times. Pupa is white, sheathed with oblong oval soil cocoon. Last instar caterpillars overwinter in cocoons in soil under tree crowns. Adult is black. Body size is 4-6 mm, wing span is 6-9 mm. Antennae are 9-segmented, black. Legs are black, brownish in middle only. Hatched caterpillars eat leaves from above, leaving veins and lower epidermis untouched. Adult insects emerged in May-July. [**Mohamed Atef Daoud, Directorate of Plant Protection, Al- Quneitra, Abdulnabi Mohamed Basheer, Faculty of Agriculture, Biological Control Studies and Research Center , Damascus University,2019**]

RESEARCH HIGHLIGHTS

ALGERIA

Comprehensive Mini-review for the New Virulence Type of *Pyrenophora tritici-repentis* Identified in Algeria. *Pyrenophora tritici-repentis* (Ptr) is the causal agent of tan spot disease on wheat, which causes important losses worldwide. Currently, eight races of this fungus are known according to their reactions on a bread wheat differential set. When durum wheat genotypes were added to the differential set, a new virulence pattern was identified. The isolates among this virulence pattern were unable to attack bread wheat in the differential set (Glenlea, 6B365 and 6B662), while they produced necrosis on durum wheat. A molecular characterization of these isolates showed the presence of the two virulence genes; *ToxA* and *ToxB* which control toxins synthesis, responsible for Glenlea and 6B-662 sensitivity, respectively. *ToxA* and *ToxB* coding regions sequences in the new virulence type isolates were similar to those of functional genes. This paper discusses and explains how the isolates among this new virulence pattern are unable to attack bread wheat differential set, even they harbored *ToxA* and *ToxB* genes. Several hypotheses are made about the possibility of PtrToxA and PtrToxB biosynthesis process alteration, which are encoded by *ToxA* and *ToxB* genes. These include any step in the pathway leading from DNA to protein; transcription, post-transcription, translation, or proteins maturation steps. Each hypothesis is supported by similar molecular event, reported previously in filamentous fungi. Then, it highlights the consequences of this finding on Ptr/wheat interaction. In fact, the results lead to suppose a new basic race, able to produce a unique new toxin, unknown yet. They also allow discussing the horizontal gene transfer hypothesis of *ToxA* to Ptr, which is supported mainly by *ToxA* conservation. **[Benslimane, H. (Algeria), Tunisian Journal of Plant Protection 14 (1): 1-9, 2019].**

Distribution of Large-spored *Alternaria* species associated with Potato and Tomato early Blight according to Hosts and Bioclimatic Regions of Algeria. Potato and tomato are important crops in Algerian agriculture, and both are threatened by abiotic and biotic stresses, and early blight is a major disease affecting both crops. Surveys carried out from 2012 to 2015 in 12 major growing regions for these crops yielded a total of 247 *Alternaria* isolates having morphological and cultural characteristics of sections *Alternaria* and *Porri*. Since early blight symptoms and morphological characteristics of the isolates did not allow sharp distinction between the different large-spored species of *Alternaria*, the isolates in section *Porri*, often considered primary causes of the diseases, were selected for molecular characterization by diagnostic PCR using specific primers. This allowed species identification of 147 *Alternaria* isolates as *A. solani*, *A. protenta*, *A. grandis* or *A. linariae*. These species were present on potato and tomato crops at varying frequencies, depending on the hosts and on bioclimatic locations. Pathogenicity tests for the four species, on detached leaflets and whole seedlings, showed that all were pathogenic to potato and tomato, with varying virulence. These results suggest that parasitic specialization of these *Alternaria* species on solanaceous plants should be reconsidered**. [Djida Ayad, Djihad Aribi, Bruno Hamon, Abdelaziz Kedad, Philippe Simoneau, Zouaoui Bouznad, (Algeria), Phytopathologia Mediterranea, 58(1): 139-149, 2019].**
doi: 10.13128/ Phytopathol_Mediterr-23988.

EGYPT

Abundance of Palm Frond Borer *Phonapate frontalis* (Fah.) (Coleoptera: Bostrichidae) with Reference to Potential Use of Garlic Extract for its Control in Siwa Oasis, Egypt. Palm frond borer *Phonapate frontalis* F. (Coleoptera: Bostrichidae) has been recently detected as an economic pest of date palm orchards at Siwa Oasis, Egypt. The infestation symptoms appeared in the form of frond break and viscous oozes at the fracture points. The present study aimed to monitor the population fluctuation of *P. frontalis* adults, using light traps during 2016 season and to test the capability of the methanolic garlic extract to deter the beetles and consequently reduce frond breakage. The average monthly monitoring revealed minor *Phonapate* adult catches during January and November with maximum numbers during June–August. Coinciding with the surveillance of *Phonapate* adults, broken fronds were periodically monitored. The highest average breakage was noticed at the period extended from May to September. Accordingly, fortnight spraying program had been designed and commenced to cover such period. At the end of the proposed program, the corrected infestation percentages recorded about 43.11, 44.89, and 42.22% at 1000, 2000, and 3000ppm of the methanolic garlic extract concentrations, respectively. Accordingly, garlic extract succeeded to diminish palm frond infestation through its capability to deter adult beetles. Engagement of cost competitive treatment as a *P. frontalis* niche (palm fronds) management tool in the proposed IPM program could support the sustainable pest management in the date palm orchards. [**Ahmed I. Imam (Egypt), Journal of Biological Pest Control, 29:4, 2019]**

Catalog of the Calliphoridae, Rhiniidae, and Sarcophagidae of Egypt (Diptera: Oestroidea). Oestroidea is a diverse superfamily of flies with a variety of feeding habits, mostly saprophages (e.g., majority of species of the genus Sarcophaga, Sarcophagidae), internal parasites of mammals (Oestridae), parasitoids (e.g., the genus Blaesoxipha, Sarcophagidae; the genus Pollenia, Calliphoridae), and predators (e.g., the genus Stomorhina, Rhiniidae). In the present study, an updated catalog of the superfamily Oestroidea recorded from Egypt is presented. The catalog covers the following families: Calliphoridae, Rhiniidae, and Sarcophagidae. A total of 126 oestroid species belonging to 31 genera, 7 subfamilies, and 3 families are treated. The treated families are Calliphoridae (8 species representing 5 genera), Rhiniidae (10 species representing 3 genera), and Sarcophagidae (108 species representing 23 genera). Synonymies, type localities, world distributions by biogeographic realm(s) and country, Egyptian localities, and dates of collection for all treated species are provided. [**M. S. El-Hawagry and S. A. El-Azab (Egypt), Egyptian Journal of Biological Pest Control, 29:15, 2019]**

Algal Application as a Biological Control Method of Root-Knot Nematode, *Meloidogyne incognita* on Cucumber under Protected Culture Conditions and its Impact on yield and Fruit Quality. This study was conducted during seasons 2016 and 2017 to control the root-knot nematode *Meloidogyne incognita* in cucumber, cultivated in infected soil, using some algal treatments under greenhouse conditions, at Kaha Farm, Qaluobia Governorate, Egypt. Six algal treatments were tested: two foliar applications of Spirulina and Amphora, two drenched soil applications of Spirulina and Amphora, two treatments using Spirulina, as spraying and drenching, and Amphora, as spraying and drenching, in addition to the Rugby nematicide (10% Ebufos, at the rate of 5 g/m2) and control. Rugby was applied by a soil prepared in its experimental units. After 15 days from transplanting, the algal extract treatments were applied twice monthly for 3 months. The same concentration (2 g/l) of both types of algae was applied in both foliar and drench treatments. The control was sprayed only by water. The results indicated that the soil drenched with Amphora or Spirulina extracts had significant increments in vegetative growth, yield, and fruit quality. In contrast, the control plants had the lowest values in all criteria. Amphora (sprayed with soil drenched) treatment gave 2.5 and 2.69 folds the control in marketable yield in 2016 and 2017 seasons, respectively. The combination of sprayed and soil drenched with Amphora was more effective in nematode's control or in enhancing plant resistance for nematode as shown at most nematode parameters, especially the rate of nematode reproduction factor (RF), which reached 0.42 and 0.45 in both seasons, respectively. It had insignificant differences compared with the nematicide. Therefore, using algae for the biological control of root-knot nematodes is recommended, especially in sustainable agriculture for maintaining the soil and improve fertility. [**A. A. S. A. El-Eslamboly, Mona M. Abd El-Wanis and A. W. Amin (Egypt), Egyptian Journal of Biological Pest Control, 29:18,2019].**

Effect of Two Egyptian Cotton Varieties on Development and Life Table of the Two-Spotted Spider Mite, *Tetranychus urticae* Koch (Acari: Tetranychidae) in Relation to Leaf Chemical Contents. The development and

life table of the two-spotted spider mite, *Tetranychus urticae* Koch (Acari: Tetranychidae) were studied when reared on two Egyptian cotton varieties: Giza 86 and Giza 90 at laboratory conditions of 27±2°C and 60±5% R.H. Results cleared that the development of *T. urticae* female was significantly affected by cotton variety. Immatures developmental time was shorter on Giza 90 (3.82 days) than Giza 86 (9.86 days). The adult female longevity averaged 12.29 and 16.65 days on Giza 90 and Giza 86, respectively. In addition, the values of Net reproductive rate (Ro), Intrinsic rate of natural increase (rm) and Finite rate of increase per day (λ) of *T. urticae* were (65.04, 0.407 and 1.502 days) and (31.95, 0.184 and 1.202 days) on Giza 90 and Giza 86, respectively. The female fecundity recorded 98.63 and 71.00 eggs / female on Giza 90 and Giza 86, respectively. The mean generation time (T) and generation doubling time (DT) values were the lowest on Giza 90 (10.27, 1.702 days) than Giza 86 (18.82, 3.766 days), respectively. A positive significant correlation was recorded between development, fecundity of T. urticae female and availability leaf nitrogen content. [**Azza A. Mohamed; Fatma Sh. Kalmosh; Hany M. El-Kawas (Egypt), Egyptian Academic Journal of Biological Sciences A. Entomology (Egypt. Acad. J. Biolog. Sci., 12(3):63– 72, 2019].** DOI: 10.21608/EAJBSA.2019.32199

IRAQ

A Simple, Rapid, Safe and Low-Cost Method to Extract DNA from Phytopathogenic Fungi. The aim of this study was to develop an easy, fast, non-hazardous and inexpensive technique for extraction of genomic DNA from multiple plant fungal pathogens. Samples of pure fungal growth of *Fusarium equesti* , *Neoscytalidium dimidiatum* , *Fusarium proliferatum* and *Alternaria alternata* isolated from diseased wheat, grapevine, potato and lily plants respectively were ground with sterilized sand and NaOH (2N), followed by a centrifuging process (14000 rpm) for 5 min to separate the sand grains and cellular components of fungi from the DNA. Subsequently, the DNA was mixed with Tris buffer (1 M) pH 8. The ITS region of rDNA was successfully amplified, sequenced and analyzed from the extracted DNA of the four pathogenic fungi. This new approach provides a simple, rapid, safe and low-cost way to obtain DNA samples of sufficient quantity and quality for use in molecular assays for the identification of plant fungi. [**Adnan A. Lahuf, Ola H. Jaafar, Zainab L. Hameed (Iraq), Asian Journal of Agriculture and Biology,7(2):197-203, 2019].**

SYRIA

Genetic Diversity of *Fusarium oxysporum* f. sp. *ciceris* Isolates Affecting Chickpea in Syria. Fusarium wilt (*Fusarium oxysporum* f.sp. *ciceris*) is the most important soil-borne disease of chickpea in Syria. Seventy isolates of the wilt pathogen were isolated from diseased plant samples from farmers' fields and research centers in Syria, and a research station in Lebanon.The samples were studied for their genetic diversity using random amplification of polymorphic DNA (RAPD), simple sequence repeat (SSR) markers and sequence characterized amplified region (SCAR) molecular markers. High genetic diversity within the populations and low among populations was observed. The cluster analyses grouped the isolates into seven clusters and the structure analyses showed three populations. Using race-specific markers, four races (0, 1B/C, 5 and 6) were identified and 12 isolates were not designated to any of the known races. The dominant races were 0 and 1B/C in the pathogen population where the former was dominant in both spring- and winter-planted chickpea crops. This study showed that ICARDA breeding lines are being evaluated against mixed races and populations. Hence elite chickpea lines distributed to national partners carry resistance to many races and populations prevalent in the Mediterranean regions. **[Maysaa Alloosh, Aladdin Hamwieh, Seid Ahmed, Bassel Alkai (Syria), Crop Protection, Volume 124, 104863, 2019].**

SUDAN

Variability and Host Specificity of *Striga hermonthica* in Response to in situ Root Exudates of *Pennisetum glaucum*. Field surveys and a laboratory experiment were conducted during the seasons 2012/13 and 2013/14 in *Striga hermonthica* endemic areas in Sudan to investigate variability and host specificity in the early developmental stages of *S. hermonthica* parasitism in response to in situ root exudates of millet; cv. Ugandi, cv. Ashana and cv. Sudan II. Field surveys were conducted to collect *S. hermonthica* seeds from sorghum and millet fields. Fifteen *S. hermonthica* populations were collected. An in vivo experiment was conducted to study the effects of in situ root

exudates of the three millet varieties on percentage of seed germination, haustorium initiation, attachment and penetration. The results revealed that in situ root exudates of all millet cultivars induced seed germination and haustorium initiation in *S. hermonthica* tested populations. Seed germination, haustorium initiation, attachment and penetration of *S. hermonthica* collected from parasitized millet in response to millet in situ root exudates were significantly higher compared to *S. hermonthica* collected from parasitized sorghum. It is noteworthy that for some individuals of the *S. hermonthica*, sorghum populations displayed limited attachment and penetration into millet roots. This study suggests two levels of physiological specialization in *S. hermonthica* in Sudan; intercrop specialization and intracrop specialization. Moreover, two strains of *S. hermonthica* are suggested, one specific to sorghum and another to millet. The existence of variability and host specificity within *S. hermonthica* populations seem to be based almost entirely on differential response of *S. hermonthica* isolates to in situ root exudates from host. **[Dafaallah, A.B., Babiker, A.T., and Hamad Elneel, A.H. (Sudan)Tunisian Journal of Plant Protection 14 (1): 83-92,2019].**

TUNISIA

Evaluation of Antifungal Activities of Essential Oils of Three Lamiaceae Plants against *Plenodomus tracheiphilus* (syn. *Phoma tracheiphila*). The mal secco (meaning dry dieback) caused by *Plenodomus tracheiphilus* (syn. *Phoma tracheiphila*) is a very serious and incurable disease on citrus. In this study, we investigated a biological control as strategy against this disease. The antifungal activity of the essential oils (EO) of thyme (*Thymbra capitate*), rosemary (*Rosemarinus officinalis*) and sage (*Salvia officinalis*) extracted by hydrodistillation, was evaluated on mycelial growth, sporulation rate and mycelial biomass of two *P. tracheiphilus* isolates. The results showed that thyme EO is the most effective product that completely stopped mycelial growth of the fungus in solid medium. For rosemary and sage EO, mycelial growth inhibition reached up to 69 and 58%, respectively. In addition, the thyme EO had the highest percentage of mycelial biomass inhibition of *P. tracheiphilus* in liquid medium which reached 91% in average, followed by rosemary and sage EO with 75and 58%, respectively. The inhibition of sporulation rate in liquid medium was also the highest under thyme EO application with 88% and the lowest with sage EO with 52% in average. These results highlighted the good in vitro antifungal activity of thyme EO on the development of *P. tracheiphilus.* Qualitative and quantitative analysis of the EO volatile profile showed that the main constituent of thyme EO is carvacrol (76. 71%). The phytotoxicity test revealed that thyme EO is toxic at a dose exceeding 60 ppm on *Citrus aurantium* detached leaves. On the other hand, the determination of the minimum inhibitory concentration (MIC) of thyme EO (400ppm) was found to be higher than the phytotoxic dose. Further analyses are needed to optimize in vivo application conditions against *P. tracheiphilus* at doses above the MIC without causing phytotoxicity. [**Kalai-Grami, L., Bahri, B.A., Chemekh, M., Hammami, M., Limam, F., and Hajlaoui, M.R., (Tunisia), Tunisian Journal of Plant Protection14 (1): 11-32, 2019].**

Variations in Essential Oils Composition and Potential as Fumigants against Stored Date moths *Ectomyelois ceratoniae* and *Ephestia kuehniella*. *Rosmarinus officinalis* and *Eucalyptus viminalis* essential oils (EO) were analysed using Solid Phase Micro-Extraction (SPME) and Gas Chromatography-Mass Spectrometry (GC-MS) techniques and assessed for their fumigant toxicity against eggs and last instar larvae of *Ectomyelois ceratoniae* and *Ephestia kuehniella*. Principal Components Analysis (PCA) and Hierarchical Cluster Analysis (HCA) revealed quantitative and qualitative differences in oil composition in relation to plant species and the technique that was used in the analysis. The major common compounds were identified as 1,8-cineole, α-pinene, β-pineneand and p-cymene. Ovicidal and larvicidal activities were highly dependent upon insect species and oils. *E. viminalis* EO was more effective compared to that of *R. officinalis*. In larval bioassays, LC_{50} values were respectively 25.80 µl/l air and 33.05 µl/l air for *E. ceratoniae* versus 12.92 µl/l air and 12.47 µl/l air for *E. kuehniella*. Moreover, ovicidal activity was lower against eggs of *E. kuehniella* than that of *E. ceratoniae*. This work clearly defends the interest in the efficacy of EOs both as ovicidal and larvicidal insecticides against stored date moth pests. [**Yousfi, S., Haouel-Hamdi, S., Bessi, H., Assoudi, C., Elimem, M., Messaoud, C., Flamini, G., and Mediouni-Ben Jemâa, J. (Tunisia/Italy), Tunisian Journal of Plant Protection, 14 (1): 33-53, 2019].**

Assessment of Thrips Damage in Citrus Orchards in Tunisia. Before the 2000s, damage produced by thrips have been considered rare or absent in Tunisian citrus orchards. However, during these ten last years and since the first report of the species *Pezothrips kellyanus*, fruit scars attributed to thrips are increasingly being reported. This study aimed to assess thrips damage on citrus and susceptibility of different citrus species and orange varieties to these

pests. The relationship between thrips damage and frequency of pesticide use was also studied. The assessment of thrips damage was achieved by visual observation of 200 to 1000 mature fruits from each of the 101 visited orchards located in different regions in Cap-Bon, Bizerte and Mornag during December, January and February from 2015 to 2017. The examined citrus species and orange varieties were Lemon, Bergamot, Grapefruit, Clementine, Mandarin, Navel, Maltaise, Valentia Late and Double Fine oranges. Frequency of insecticide treatments and type of active ingredients in visited citrus orchards were noted in relation with damage rate. Fruit scars caused by thrips were 20% on average for all citrus species and orange varieties. Bergamot and Lemon seem to be the most sensitive citrus species to *P. kellyanus*, while Maltaise and Navel oranges were the most orange varieties affected by marbling caused by other thrips species. Data provided by 94 citrus orchards showed that damage increases with the rise of the number of pesticide applications per year. In fact, thrips are currently common in citrus orchards in Tunisia. However, their harmfulness may become more severe as the management of citrus pests is based mainly on broad-spectrum insecticides that eliminate the beneficial insects and could enhance thrips populations. The introduction of new invasive species could also contribute to increase economic importance of thrips. **[Belaam-Kort, I., and Boulahia-Kheder, S. (Tunisia), Tunisian Journal of Plant Protection 14 (1): 55-68, 2019].**

Screening Chickpea Lines and Varieties for a Possible Resistance or Tolerance to the Pod Borer *Helicoverpa armigera*. *Helicoverpa armigera* is a polyphagous moth that causes substantial economic losses on various crops in the world. The use of resistant or tolerant varieties is one of the most important components of integrated pest management and can play major role in its control. The flight activity of male moths was monitored using Delta traps baited with sexual pheromone installed in a chickpea field planted with 27 chickpea lines and varieties in the northern of Tunisia. During the experimental period, weather conditions did not affect the flight activity of *H. armigera* males. However, it was affected by the different crop development stages. Screening the different chickpea lines and varieties for resistance or tolerance to *H. armigera* allowed us detecting a resistant variety which is cv. Kasseb. Kasseb has shown the minimum level of damage in pods and seeds per plant which did not exceed 2.5%. [**Bouslama, T., Laarif, A., Soltani, A., Chaieb, I., Amri, L., and Rhouma, A. (Tunisia /Morocco), Tunisian Journal of Plant Protection 14 (1): 69-81, 2019].**

PLANT PROTECTION NEWS IN THE ARAB AND NEAR EAST COUNTRIES

❖ Graduate Students Activities (Master and Doctorate Thesis)

Study of the Genetic Diversity of *Fusarium oxysporum* f. sp. *lycopersici* agent of Tomato Eilt and search for the Antagonistic Effect of *Trichoderma* spp. with Respect to the Pathogen.

Surveys in various production areas of tomato crop in Algeria were conducted from 2012 to 2015. 50 isolates of tomato *Fusarium* wilt were obtained from diseased tomato plants. A molecular characterization study was performed using specific primer PF02-03 led to identify 29 isolates as *Fusarium oxysporum*. Additionally, PCR amplification with specific primers P12-F2B / P12-R1, SIX3-F1/SIX3-R2, SIX4-F1/SIX4-R1 and SIX3-G137C-F1/SIX3-R2 discriminated between *Fol* races, and *Forl* forma speciales, allowing the identification of 9 of 29 isolates, as *Fusarium. oxysporum* f. sp. *radicis-lycopersici* (*Forl*) and 19 of them were identified as *Fusarium oxysporum* f. sp. *lycopersici* (*Fol*) namely, 17 isolates as race 2(dominant race), 2 isolates as race 3 and none of isolates were identified as race 1. Furthermore, the *in vivo* pathogenicity test showed a large diversity in term of disease index ranged from 1.2 to 3.7 recorded by F9 (*Forl*) and F30 (*Fol*) isolates respectively. This characterization was completed by a study of isolates diversity by the ISSR markers, showing a high genetic diversity detected within even, the same race isolates as well as between isolates belonging to different races. The results showed that only 10 isolates tended to cluster by pair of isolates with similarity index more than 0.55 and the rest of isolates showed similarity index less than 0.5. However, a correlation might be noted between the virulence and molecular discrimination assay using specific primers. In order to improve biocontrol method against tomato *Fusarium* wilt, three different species namely, *Trichoderma asperellum*, *Trichoderma harzianum* and *Trichoderma ghanense* were identified within a collection of 17 local *Trichoderma* isolates. It is noteworthy that *Trichoderma ghanense* has never been reported in Algeria before. Although, T8 (*T. ghanense*) recorded the highest growth inhibition values against *Fol* isolate F42, on both membranes with 56.87% on cellulose membrane and 51.22% on cellophane membrane, the antagonistic potential of *Trichoderma* isolates tested *in vitro*, showed that their antagonist capacity depends on the targeting phytopathogenic

isolates. Similarly, by *in vivo* antifungal activity test, *Trichoderma ghanense* isolate T8, showed the highest decrease in disease incidence with 53.12% and 48.28% against Forlc and the *Fol* isolate F42 respectively. Such isolates might be selected as biological agent to control these pathogens. **[Ali Debbi (Algeria), Ph. D thesis, defended on June 13th at the Higher National School of Agronomy, Department of Botany, (Doctorate, 2019)].**

Study of the pathosystem Wheat-*Zymosepetoria tritici*: Sexual Reproduction and Acquisition of Knowledge for the Heritability of Resistance.

Septoria Tritici Blotch caused by the heterothallic fungus *Zymoseptoria tritici* is a large distributed wheat disease in Algeria and worldwide, with yeild losses up from 30 to 70%. In Algeria, the disease is considered as frequent, with an increased occurrence in the north part of the country. The aim of this thesis is to study sexual and asexual reproduction pathway of *Z. tritici* by: (1) Determination of both mating types Mat1-1 and Mat1-2 on a *Z. tritici* population and analyzing their frequencies distribution among macro and micro geographical scale; (2) Investigation for the G143A monogenic mutation conferring resistance of *Z. tritici* to strobilurins fongicides (QoI), using the MAMA technique ; (3) Providing evidence of the teleomorph *Z. tritici* occurrence under natural field conditions and investigation of frequencies occurrence of sexual fructification across seasons ; (4) Acquiring knowledge for resistance inheritance in wheat by optimizing an *in planta* crossing procedure to induce sexual reproduction of Z. *tritici*, under semi-controlled conditions. Mating types of 208 isolates of *Z. tritici* from six wheat growing regions in Algeria were determined. Statistical analysis showed co-occurrence of both mating types at a global scale, reflected with an equal distribution of frequencies of mating types, with a 1:1 ratio and 53% Mat1-1 isolates and 47% Mat1-2 isolates. Also, co-occurrence of both mating types was revealed on 38% of leaves tested and 44% of lesions tested. Occurrence of the G143A mutation was investigated among 208 isolates of *Z. tritici* collection; six mutant isolates were showed to be resistant to strobilurins among two wilayas (Algiers and Constantine). Resistance profile was confirmed by presence of specific bands of the mutant gene (resistant) and by an *in vitro* bioassay of sensitivity to fongicides. This kind of resistance within *Z. tritici* population is reported for the first time in Algeria. Investigation for sexual fructifications of *Z. tritici*, in Algiers, from august 2015 to august 2016 led to report the presence of the teleomorph of the fungus, under natural field conditions, for the first time in Algeria. Morphologic characteristics of sexual fructifications (pseudothecia, ascus and ascospores), isolation of the pathogene by ascospores trapping procedures and pathogenicity test confirmed all together that pseudothecia collected from field belong to *Z. tritici* species. Pseudothecia frequencies occurrence and ascospores discharge intensity recorded during the survey period indicate that pseudothecia were present on plant debris with a major peaks between November 2015 and January 2016. Pseudothecia were also observed on wheat plants during vegetation with dominant frequencies on durum wheat plot, from late June 2016. Inducing teleomorph formation *in planta* under semi-controlled conditions led to the validation of the crossing procedure of two compatible partners, as a result, mature pseudothecia of *Z. tritici* were obtained. Also, inoculations conducted showed differentiated responses of two varieties used, Simeto and Hoggar. Sexual reproduction is more effective on a susceptible host (Hoggar) than on a resistant one (Simeto). However, host resistance may delay the asexual multiplication of the pathogene without preventing sexual reproduction, when two compatible partners meet**. [Hayet Meamiche (Algeria), Ph. D. Thesis Defended on May 2th 2019 at the Higher National School of Agronomy, Department of Botany, El Harrach-Algiers, Algeria. (Doctorate, 2019)].**

Biological Study of Cotton Leafworm *Spodoptera littoralis* (Boisduval, 1833) (Lepidoptera: Noctuidae) and Effect of *Bacillus thuringiensis* in the Laboratory.

The effect of three host plants (castor oil, cabbage, and tomato) have been studied on some biological aspects of *Spodoptera littoralis*) Boisduval, 1833) (Lepidoptera: Noctuidae) at laboratory at conditions, in September 2014. The results revealed that mean incubation period of eggs laid by moths derived from larvae fed on castor oil, cabbage, and tomato was 4.1±0.75, 4.2±0.6, 4.7±0.77 days respectively, and differences was not significant between castor oil and tomatoe, but very high significant between these two hosts and cabbage. Larvae passed through six instars, and when fed on castor oil the larval duration was for the first, second, third, fourth, fifth and the sixth instar 4.12±0.32, 2.62±0.49, 2.75±0.44, 2.5±0.51, 3.5±1.31, 4.05±0.89 days respectively, while when fed on cabbage leaves the larval duration was for the first, second, third, fourth, fifth and the sixth instar 4.58±0.5, 3.54±0.72, 3.19±0.79, 3.51±0.65, 3.41±0.65, 7.7±0.51 days respectively, and when fed on tomato leaves the larval duration was for the first, second, third, fourth, fifth and the sixth instar 4.5±0.51, 3.1±0.59, 3.12±0.67, 3.04±0.84, 3.95±1.52, 4.89±0.68 days respectively, and results revealed that castor oil significantly exceeded the other two hosts in terms

of short duration of the six larval instars. with very high significant differences between the hosts. The mean pupal duration was 11.3±2.1 days when larvae reared on castor oil leaves, 12.5±0.57 when larvae reared on tomato leaves and 14±1.1 days when larvae reared on cabbage leaves with very high significant differences between the three hosts. The mean pupal weight was 0.36±0.05 g when larvae reared on castor oil leaves, 0.25±0.03 g when larvae reared on tomato leaves and 0.24±0.12 g when larvae reared on cabbage leaves, with high significant differences between castor oil and the other two hosts (P.(0.01>). The effect of commercial product Delfin WG) *Bacillus thuringiensis* subsp .*Kurstak i*32000 IU/mg SA-11) has been studied on 1st2 ,nd and 3rd larval instars of cotton leafworm in laboratory using six concentrations 0.125, 0.25, 0.5, 0.75, 1 and 1.125 g/l. The result revealed increasing in mortality of all larval instars due to increasing the used concentration and exposure time. Twenty five days post treatment median mortalities for used concentration 1.125g/l were 80.5±25.43% and 78±24.19% for 1st larval and 2nd larval instar respectively, with significant differences among this concentration and the other used ones, while median mortalities for used concentrations 1.125 and 1 g/l were 74±23.92% and 68±21.90% respectively for 3rd larval instar with no significant differences between these two concentrations but significant differences among them and the other four concentrations. $LC_{50}$was 0.076 g/l for 1st larval instar, 0.106 g/l for 2nd larval instar and 0.115 g/l for 3rd larval instar which was the least susceptible among the three instars. The differences among instars were significant at 99% limits of freedom (P .(0.01>results also revealed a negative relationship between used concentration of Delfin and LT_{50}values. These values were 12.721 and 0.998 days for 1st larval instar; 16.662 and 1.209 days for 2nd larval instar, and 22.381 and 1.545days for 3rd larval instar for the used concentrations 0.125g/l, and 1.125g/l respectively, which confirmed that 1st larval instar was the most susceptible followed by 2nd larval instar and the 3rd larval instar was the most resistant. The differences among used concentrations were significant at 99% limits of freedom (P.(0.01>). **[Maria Osama Daloul (Syria), Supervisors: Prof. Dr. Abdul Karim Algendi, Department of Plant Protection, College of Agricultural Engineering, Tishreen University and Dr. Mageda Moufleh General Commission for Scientific Agricultural Research, Syrian Arab Republic (M. Sc. thesis, 2019)].**

Ecological Study of the Fruit Fly *Ceratitis capitata* on Citrus in Lattakia Region and ability of Laboratory Rearing.

Citrus trees are distributed in Syria on an area of 44098 ha, with an estimated production of 1173086 tons, Fruit Fly *Ceratitis capitata* (Wiedemann, 1824) is the most important insect pests on fruit trees including citrus in the world and in the Syrian coast. The increasing prevalence of fruit flies on fruit and vegetable crops in the Arab and Mediterranean region is causing a high economic loss on these crops. The research was carried out between June 2016 and February 2018. The field work was carried out in the village of Sarsakia in the Lattakia region, within 5 orchards planted with different species and varieties of citrus. The laboratory work was carried out in the laboratories of the Agricultural Scientific Research Center in Lattakia. The research aims to study the change of fruit fly numbers on citrus trees in Lattakia region, study of the effect of environmental factors (temperature - humidity) on the density of the insect, study the parasites of the fly and conduct experiments to investigate the possibility of breeding the fly in a laboratory. Five of McPhail Traps, which contain (Femilure) a new pheromone attractive to females of *C. capitata* were distributed on citrus trees in the study area on 4/6/2016 and the traps readings were taken weekly until 3/6/2017. The attractant replaced after 18 weeks. We put a digital (thermometer - humidity) in the search site, and recorded the temperature and humidity minimum and maximum weekly. Fruits infected with fruit flies were collected from the study site, insects were isolated and classified using taxonomic keys. Four syntheyic diets were also prepared (Nibagin, Casein, Dextrose and Toliman) at a rate of 15 reprised for each diet and studied the effect of the four diets on the fruit fly phases. The results of McPhail Traps indicated a decrease in the number of flies during the summer months of June, July and August (picking of late varieties),returning to activity in autumn from mid-September (the beginning of the citrus maturity) to reach a peak from late October to November (Available fruits and appropriate conditions),to return and disappear suddenly in the winter from the beginning of December (a severe decrease in temperature to approximately 0 C°) until the beginning of June next year. The temperature had a low correlative correlation r = 0.199 and moisture had a very low inverse correlation r = -0.0282. *Aganaspis daci* (Figitidae: Hymenoptera) was isolated from various citrus fruits (Valencia, Satsuma and Clementine) during the late citrus season in June, during the first month of November and November 2017, and the highest parasitism was 12.96 % In the sample of Clementine on 23/11/2017. Laboratory experiments for fruit flies showed that the nibagin diet was the most success tested diet for fruit fly rearing**. [Joubran Solaiman Shrieba (Syria), Supervisors: Prof. Dr.**

Nabil Abo Kaf, Department of Plant Protection, College of Agricultural Engineering, Tishreen University and Dr. Mageda Moufleh General Commission for Scientific Agricultural Research, Syrian Arab Republic (M. Sc. thesis, 2019)].

Evaluation of the Efficiency of some Plant Extracts in the Control *Tetranychus urticae* Koch on Eggplant under Greenhouse Conditions

The two-spotted red spider mite *Tetranychus urticae* Koch (Acari: Tetranychidae) is a serious pest and present worldwide on a wide range of host plants in both outdoor crops and greenhouses. Synthetic pesticides have been extensively used to control this pest. But the excessive use of these pesticides and their negative effects on human health and environment, in addition to the associated problems of resistance, led to an increasing public demand for natural pesticides. Plant extracts are one of several natural compounds control methods that have recently received increasing attention. In this context, this study aimed to evaluate the efficacy of different part aqueous extracts of 5 plant species against *T. urticae* on eggplant (*Solanum melongena* L.) under both laboratory and greenhouse conditions. Laboratory experiments were carried out at Faculty of Agriculture, Tishreen university in 2016 by using leaf disc method, and the greenhouse trials were done in eggplant greenhouse at Al-Basah, (5 Km from Lattakia) during 2016-2017 agricultural season by using vaseline rings method. These plant parts used were seeds and leaves of Chinaberry *Melia azedarach* Linnaeus 1753 (Rosidae: Meliaceae) and Cypress Lemon *Cupressus sempervirens* Linnaeus 1753 (Pinidae: Cupressaceae), seeds and fruits of River Red Gum *Eucalyptus camaldulensis* Dehnhardt 1832 (Rosidae: Myrtaceae), flowers and leaves of Oleander *Nerium oleander* Linnaeus 1753 (Asteridae: Apocynacea) and corms and leaves of Wild Arum *Arum maculatum* Linnaeus 1753 (Arecidae : Araceae). The effect of part plants extracts were tested for mortality means of studied stages (protonymphs, adult females and egg), and percentage oviposition means to indicate the fertility of females. Laboratory results showed that: The extract of *N. oleander* leaves was significantly higher than the rest extracts in the effect on the eggs (88.8%) followed by the flowers extracts of *N. oleander* (87.8%). Extract of *M. azedarach* seeds was more effective as toxic effect against adult females and protonymphs (74.5-78.4% respectively) followed by *N. oleander* leaves extracts (60.99-66.1%, respectively). The highest fertility was shown by extract of *C. sempervirens* leaves (47.3%). Greenhouse results showed that: Efficacy of the extract of *N. oleander* leaves on the eggs was 87.4 %, *N. oleander* flowers extract came second (85.3%). The effects of the rest of plant extracts on eggs hatching were lower than 50%. The highest death rates of *T. urticae* at adult females and protonymphs stages were found with *M. azedarach* seeds extract (65.4, 69.3% respectively). *N. oleander* leaves and its flowers and the *M. azedarach* seeds extracts exhibited the lowest oviposition deterrent activities to *T. urticae* throughout the experiment (8.17, 11.3, 14.4%, respectively). All plant extracts were more effective in the laboratory than in the greenhouse. Different Effectiveness of Plant Parts in Effect on *T. urticae* phases was observed, Seed, fruit and corma extracts were more effective than leaves, which in turn were more efficient than flowers. **[Usama Sajee Sheban (Syria), Supervisor: Dr. Ibrahim Aziz Sakr, Department of Plant Protection, College of Agricultural Engineering, Tishreen University, Syrian Arab Republic (M. Sc. thesis, 2019)].**

Presence and Seasonal Variations of the main Viruses affecting Honey Bees in Apulia Region, South Italy.

Regarding the economic importance of the honey bees *Apis mellifera* that guarantees the pollination of a wide variety of crops, as well as its role in production honey, the Algerian student Meriem Ahdouga is finalizing her master's degree in IPM on the **presence and seasonal variations of the main viruses affecting honey bees in Apulia region, south Italy** in the framework of a collaborative research between the CIHEAM IAMB and the CNR of Bari. The study is based on the molecular characterization of the main viruses affecting honey bees, therefore, a wide survey has been carried out during spring –summer 2019 in four main provinces of Apulia region. The study also includes sequencing and phylogenetic analysis of the detected viruses. **[Meriem Ahdouga (M. Sc, 2019)].** **(Algeria-Italy).**

❖ Some Plant Protection Activities of FAO and Other Organizations

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

FAO Conducts A Training Program for The Eradication of Red Palm Weevil in Iraq.

Baghdad, 3 July 2019 - The Food and Agriculture Organization of the United Nations (FAO) in Iraq, in collaboration with the Ministry of Agriculture in Iraq, and with the participation of experts from across the region, held a two-day workshop and training program for the eradication of Red Palm Weevil (RPW) in Iraq from 1 to 2 July in Baghdad.The training focused on strengthening the national institutional capacities and technical capabilities of all stakeholders, particularly the ministry of agriculture staff and farmers to enforce the appropriate phytosanitary measures and pest management practices; to combat the infestation and eliminate the further spread of the pest. Session also covered theory and practice on the eradication of red palm weevil by international protocols. RPW infestation was first recorded in Safwan, Basrah Governorate of Iraq during October 2015. Since the first report of RPW in Safwan Province / Basrah Governorate, the Ministry of Agriculture (MoA) in coordination with Basrah Agriculture Directorate has immediately taken several legislative and management measures to control the pest. The solution revolved around monitoring, management and eradication to curtail the problem which has been considered as the 1st phase of the national action plan to deal with this sudden infestation in Iraq.

Mr Mustapha Sinecure, FAO Representative a.i in Iraq welcomed the participants and highlighted the importance of the technical cooperation programme (TCP) for the eradication of RPW, a key pest of date palm detected in Safwan, Basra Province of Iraq during 2015. The Project facilitated capacity building of the ministry of agriculture staff and other stakeholders on the control of RPW through 10 Workshops and understanding of RPW management strategies from several International Experts. The Project also organised a joint Inception Workshop in Erbil involving Iraq, Iran, and Kuwait. Iraq will also participate and benefit from future FAO Programs on RPW conceptualised during the donor meeting held in Abu Dhabi during March 2019.

Dr Hussein Ali Saud, Ministry of Agriculture Adviser for animal resources activity appreciated the achievements of the Project which has succeeded in containing the spread of RPW but cautioned about the existing risk of future invasions of RPW from neighbouring countries. Mr Al Saud highlighted the importance of the phytosanitary measures activated by MoA against RPW and hoped that the Project would be extended beyond 2019.
Mr Thaer Yaseen, Regional Plant Protection Officer, FAO-RNE, Cairo presented the outputs and activities of the FAO Program for the Eradication of Red Palm Weevil in the NENA Region to intensify governance, monitoring, scientific research, capacity building, and coordination. He assured continuous support from FAO for the eradication of RPW in Iraq, including the strengthening of regional cooperation with Kuwait.

Following the training and consultations, participants agreed on several recommendations to contain and control RPW which has been instrumental in preventing the spread of this pest in the rest of the governorates of the Republic of Iraq and to enhancing regional cooperation to control this pest.
http://www.fao.org/neareast/news/view/en/c/1201085/

Regional Workshop Discusses Stronger Control of Transboundary Animal and Plant Diseases and Pests in Iraq and Syria

Baghdad – July 2, 2019: The Food and Agriculture Organization of the United Nations (FAO), in cooperation with Iraq's Ministry of Agriculture and Ministry of Health and Environment, held the inception workshop of the 'Strengthening Transboundary Animal and Plant Control Mechanisms in Iraq" project on Tuesday, July 2nd, 2019 in Baghdad.

The workshop aimed at assessing the current capacity of Iraq's agricultural and veterinary quarantine facilities and identifying strengths, pain points and development opportunities. It also sought to review and update the legal and legislative framework of quarantine processes to ensure they comply with the requirements of the International Plant Protection Convention (IPPC) and the World Organization for Animal Health (OIE).

Additionally, the event was designed to educate the participants about the Agreement on the Application of Sanitary and Phytosanitary Measures (the "SPS Agreement"), the International Standards for Phytosanitary Measures (ISPM) and the OIE's standards.

The workshop discussed ways of identifying and detecting quarantine (notifiable) pests and diseases, devising a long-term plan to improve the efficiency of quarantine agencies, besides the development of a contingency plan to address pests and potential diseases.

It also looked into ways of developing Standard Operating Procedures (SOPs) for inspection purposes as well as prospects for the provision of technical support to establish an agricultural quarantine quality assurance system. The workshop tackled means of supporting quarantine pest and disease laboratories and the rehabilitation of border inspection and quarantine stations.

Thaer Yaseen, Regional Plant Protection Officer, FAO-RNE, delivered an opening speech on behalf of the FAO representative in Iraq, in which he welcomed the participants who came from the ministries of agriculture and health and underscored their key role in achieving the project's objectives. Yaseen underlined the importance of supporting agricultural and veterinary quarantine to protect Iraq's agricultural resources from transboundary diseases, which pose a major threat to food security and agricultural investments.

Dr. Hussein Ali Saud, Adviser to the Iraqi Minister of Agriculture, voiced the minister's support of the project and said the ministry is keen to draw up development schemes and upgrade agricultural and veterinary quarantine facilities in Iraq.

Dr. Abdul Sattar Al-Kubaisi gave an overview of Iraq's veterinary quarantine structures and the regulatory framework, pointing to the damage many border quarantine stations suffered and the need for their reconstruction. He also highlighted the need for supporting dedicated laboratories to ensure that animal- or meat-borne epidemiological pathogens will not enter Iraq.Representative of the Ministry of Agriculture, Esraa Hashim, outlined the Agricultural Quarantine Law which serves as the legislative and procedural framework of the Iraqi quarantine authorities. She also underlined the need to build and develop more quarantine stations to ensure an efficient quarantine system. Hashim emphasized that the priority is to build and upgrade the technical and knowledge capacities of quarantine staff.

Dr. Laith Abbas, Representative of the Ministry of Health, spoke about cross-cutting areas between health and veterinary quarantine authorities, referring to the laws and regulations governing the work of health quarantine authorities in the country. He highlighted some responsibilities of health quarantine authorities, which include meat and animal products inspection against potential threats to public health and could carry zoonotic epidemics such as avian influenza.

Friederike Mayen, FAO Senior Livestock Development Officer, reviewed the most significant and most dangerous global epidemics caused by transboundary animal diseases and pests, as well as FAO's efforts to strengthen the capacity of states to address the risks of such diseases.

Thaer Yaseen, Regional Plant Protection Officer, FAO-RNE, spoke about the threats plant diseases and pests pose to Iraq, especially as the country's agricultural trade and imports increased by 4 to 5 times during the past ten years.

He explained that higher trade movement could increase the threat of such diseases given the heavy burden placed on Iraq's quarantine authorities because of armed conflicts and political turmoil that plagued the country in the last twenty years.
The workshop concluded with some recommendations and proposals related to the activities necessary to achieve the objectives of the project and the development of a practical plan to implement the activities within the time frame specified for the project at the end of the current year 2019. This is in addition to the distribution of responsibilities to various parties to ensure the participation of all relevant bodies and coordination and cooperation among them.
http://www.fao.org/neareast/news/view/en/c/1201313/

FAO Organizes Regional Workshop on Water Hyacinth Management and Control in Al Nahr Al Kabir River

Tripoli, Lebanon, 27 June 2019 -
About 25 plant protection, bio-control and water management specialists from Syria and Lebanon participated in a workshop held by the Food and Agriculture Organization of the United Nations (FAO) in the cities of Tripoli and Al Abdeh in northern Lebanon to identify methods used to control water hyacinth, which has widely spread in the Wadi al Kabir River for years. The four-day workshop was held in cooperation with the Lebanese Ministry of Agriculture, the Lebanese Ministry of Energy and Water, and the Syrian Ministry of Agriculture and Agrarian Reform. The aim was to share Egypt's successful experience in controlling the weed through biological means.

Representatives of the Lebanese and Syrian ministries discussed the danger of the spread of water hyacinth in streams and water bodies and the national efforts being made in both countries to control the spread of this harmful weed. Dr. Thaer Yaseen, Plant Protection Officer at the FAO Near East and North Africa Office in Cairo, noted that water hyacinth endangers the livelihoods of many farmers and fishermen who depend on the Al Nahr Al Kabir River for their living. He said the wide and rapid growth of the weed blocked irrigation channels and pump pipes. The weed also causes the loss of huge amounts of water as a result of evaporation and erosion, disrupts river navigation, and hampers fishing operations. It also has a negative impact on aquatic organisms as it prevents sunlight from the reaching the river.

The FAO response came after the governments of Syria and Lebanon requested the UN agency's help to manage water hyacinth and reduce its harmful effects. FAO brought in biological control experts to transfer the successful Egyptian experience in controlling the weed through biological agents.
Dr. Yahya Fayyad, a bio-control expert at the Plant Protection Research Institute, Egypt's Agricultural Research Center, explained that it is possible to control the weed using two types of weevils that feed on water hyacinth. He said Egypt brought the two types from the original home of water hyacinth in the Amazon River Basin in South America in the seventies and conducted many experiments to make sure the insects did not feed on any other plants. Studies were also made on the lifecycles of those insects and their ability to control water hyacinth.
"Based on the results of those studies, a number of those insects were released in many water bodies in Egypt, such as the lakes of Mariout and Idku, between 2000 and 2009, and the results showed that the insects were able to reduce water hyacinth by 70- 95%," he said.

In addition to theoretical lectures, the workshop included field visits to the sites in Nahr Al Kabir River basin on the Lebanese-Syrian border where the weed is spread to train the participants on ways to deal with the herb, evaluate its spread, and identify the different parts of the plant and ways to examine them to find the biological enemies.
The participants explained that mechanical control methods over the past years did not yield the desired results. The population in the river basin area increasingly complain about the damage that the weed causes to their livelihoods. Biological control specialists from the Syrian side reviewed successful experiments to eradicate the weed from some water bodies in Lattakia as well as the national plans to establish laboratories to produce biological enemies of the

weed in Tartous Governorate. They also explained some initial experiments that were conducted by releasing biological enemies in Mahrada Dam (on the Orintos) in Hama Governorate.

Discussions continued during the four days of the workshop to come up with a joint action plan that would allow for effective measures to control the weed in Al Nahr Al Kabir. The most important points in the plan of action is the need to accelerate the establishment of centers for the production of pathogens in Tartous in Syria as well as centers for receiving and preserving these agents in the province of Akkar in northern Lebanon. The action plan also stressed the need to use modern remote and satellite imaging techniques to follow the weed and the impact of the biological control agents. It also encourages full coordination among the different ministries within and between countries so that control measures can succeed.

Water hyacinth is one of the most dangerous invasive plants in the world, as it was able to spread from its place of origin in South America to all other continents with the exception of The Arctic Ocean. The weed's capacity to double its population in 10-12 days makes it the fastest growing plant on Earth. These plants absorb billions of cubic meters of water, resulting in water scarcity in many areas, and causing the death of aquatic organisms in rivers and lakes.Many experiments have shown that these plants are of no use because they absorb toxic heavy metals, which in turn may be transmitted to animals feeding on them or even to the land in which they are buried. Moreover, the roots of the water hyacinth contain many intermediate hosts of parasites, such as snails that cause Schistosomiasis, and can be a breeding habitat for female mosquitoes. The larvae of mosquitoes then stick to the roots of the plant triggering the spread of mosquitoes and mosquito-borne diseases.
The beauty of water hyacinth flowers led to its introduction into Egypt during the reign of Mohammed Ali to decorate water bodies around the royal palaces, but the plant spread out of control causing a lot of problems until it was finally controlled after 2000 by means of planting certain species of weevil that were imported from South America, feeding exclusively on water hyacinth and thus destroying its capacity to reproduce and spread.
The participants in the workshop made recommendations to manage the harmful weed, and these were discussed with the concerned experts. At the end of the workshop, a joint program to control water hyacinth in Al Nahr Al Kabir River will be worked out.The workshop also helped the participants develop control programs for a number of rivers infested with water hyacinth in Syria. The workshop also came up with important recommendations regarding the activation of laboratories to produce biological enemies in Tartus in Syria and the cooperation between the two countries on the use of these agents and on continuous monitoring of the weed in the river to remove it at an early stage before it covers the water body. http://www.fao.org/neareast/news/view/en/c/1200279/

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

DESERT LOCUST SITUATION

Warning level: THREAT

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

General Situation

Spring breeding declines but swarms appear in the Horn of Africa

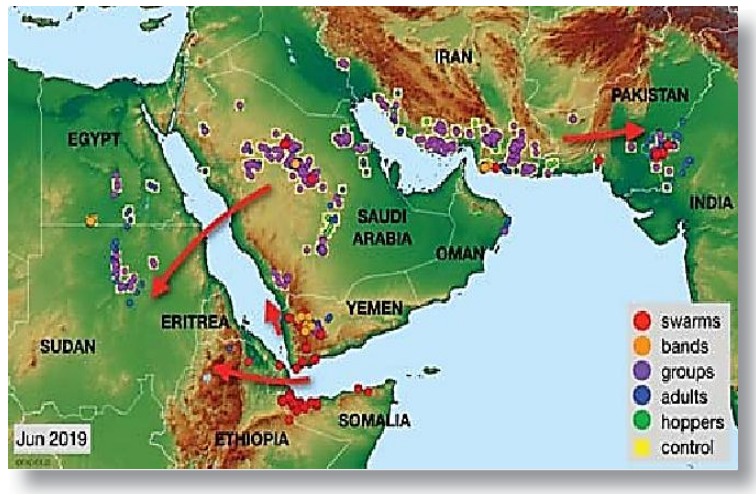
Spring-bred infestations in Iran, Saudi Arabia and Pakistan declined during June due to continued intensive control operations, drying conditions and increasing temperatures. However, locusts increased along the Indo-Pakistan border as breeding continued and several swarms arrived in Rajasthan to lay eggs. Control operations were undertaken in both countries. Numerous mature swarms were seen in Yemen where some remained to lay eggs while others crossed the sea to northern Somalia, southern Eritrea and eastern Ethiopia. Some of these swarms could continue moving to the interior of Sudan while others could breed on the northern Somalia coast, in eastern Ethiopia, and on the Red Sea coast in Yemen and adjacent areas in Saudi Arabia because all of these areas received good rainfall in June. There remains a moderate risk that small spring- bred swarms may have escaped detection and control in the Arabian Peninsula and could arrive in the summer breeding areas of Sudan to lay eggs. Groups of

mature adults appeared in the Western Desert of Egypt at the end of June. This year's summer breeding is anticipated to be heavier than normal, resulting in hopper bands and perhaps small swarms along the Indo-Pakistan border where two generations may be possible, in Yemen where survey and control operations are limited, in Ethiopia and northern Somalia, and in the interior of Sudan. In comparison, only small-scale breeding is expected this summer in the Western Region.

Western Region: CALM
SITUATION. Small-scale breeding occurred in Algeria (399 ha treated). There were unconfirmed reports of adults in northeast Niger. FORECAST. Small-scale breeding will occur in Mali, Niger and Chad followed by Mauritania, causing locust numbers to increase slightly.

Central Region: THREAT
SITUATION. Control operations continued in Saudi Arabia (39 270 ha) against declining spring-bred populations. Numerous swarms were in the Yemen highlands and some moved to northern Somalia and Ethiopia. Adult groups persisted in northern Sudan (3 700 ha treated). Hopper bands and adult groups were treated in Egypt (604 ha). FORECAST. Breeding will continue in Yemen, giving rise to hopper bands. Breeding will start in the interior of Sudan and western Eritrea and may also occur in Ethiopia and along the coast of northern Somalia. A few small swarms may arrive in these areas from the spring breeding areas.
Eastern Region: CAUTION

SITUATION. Control operations continued in southern Iran (247 270 ha) and Pakistan (8 684 ha) against declining infestations of spring-bred hopper and adult groups. Swarms arrived and laid eggs in India, and control was undertaken (3 991 ha).FORECAST. Remaining spring-bred adult groups and perhaps small swarms will move to the Indo-Pakistan border for summer breeding, giving rise to hopper groups and bands.



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

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

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

June 2019 -High-level Desert Locust Emergency Consultative Meeting for Undersecretaries of Agriculture of Member Countries of the Commission for Controlling the Desert Locust in the Central Region

FAO's Commission for Controlling the Desert Locust in the Central Region (CRC) organized an emergency consultation meeting to discuss ways to stop locust outbreak in the region.

The meeting amid to update member states on the locust situation in the region and the future possibilities. It will urge the member states to take all necessary measures to prepare for any further possible developments, and to assess available national resources to deal with locust crises, such as spraying machines, pesticides, vehicles and financial and logistical support. The participants in the meeting will also discuss promotion of regional cooperation and solidarity and multilateral support among the countries of the region.

Since November 2018, desert locust breeding areas in the Arabian Peninsula, Egypt, Sudan and the Horn of Africa have seen large locust outbreaks. Many locust swarms have formed and moved among winter, spring and summer breeding areas, causing extensive damage to agricultural crops in many countries of the region. The pest has so far spread into Eritrea, Sudan, Egypt, Saudi Arabia, Yemen, Jordan, Kuwait, Somalia and Ethiopia, as well as Iran, Pakistan and India in the eastern region.

These countries have carried out intensive and continuous control operations for more than seven months, which helped stop the flow of locusts into other countries in the region. Approximately 500 000 ha have so far been treated.

NEW POSITION

Dr. Shoki Al-Dobai, member of the Editorial Board of the Arab and Near East Plant Protection Newsletter has been promoted to Senior Agricultural Officer and assigned as a Team Leader of Locusts and Transboundary Plant Pests and Diseases group at FAO's Plant Production and Protection Division (AGP) in FAO Headquarters in Rome, Italy. Dr. Al-Dobai has been the Integration and Support Team Leader at the International Plant Protection Convention Secretariat. The Arab Society for Plant Protection and the editorial board expresses to our colleague Al-Dobai its heartfelt congratulations and wish him all success in his new position, and looking forward for his usual continuous support to the Newsletter and the Society from his new position.

The 14th IPVE Symposium was held in Seoul, South Korea during the Period 13-17 May, 2019.

The 14th IPVE symposium was held in Seoul, South Korea during the period 13-17 May, 2019. The meeting was attended by 135 scientists from 33 countries from around the world. 63 oral presentations were presented in 10 sessions that focused on epidemiology and ecology, modelling, virus evolution, virus-vector interactions, climate change and virus diseases, disease control, diagnostics and surveillance, with one session dedicated to plant virology in East Asia. In addition, 60 posters covering all the above-mentioned areas were also presented. Two Arab scientists attended the meeting, one from Lebanon (**Khaled Makkouk), and one from Tunisia (Faten Mansouri).**

The Fourth International Arabic Impact Factor Conference: Classification of Arab Universities

The Fourth International Arab Impact Factor Conference: Classification of Arab Universities was held at the Nile University, 6 October, Egypt during the period 21-24 June, 2019, under the patronage of the Arab Universities Union. Around 300 research scientists and academicians from 15 countries in the Arab region and beyond participated in this event with 120 presentations. The main objectives of the conference was to discuss how to assess published research in all disciplines and evaluate present directions of science indexing and compare international and Arab efforts in this direction.

As part of the conference activities, a completion for the best Arabic scientific journal was organized. The Arab Society for Plant Protection entered this competition by a paper entitled "The Arab Journal of Plant Protection: a leading refereed journal for scientific writing in the Arabic language" written by Khaled Makkouk, Safaa Kumari and Bassam Bayaa and presented in the conference by Khaled Makkouk, the Editor-in-Chief of the journal. There were 11 journals that entered the competition and they were evaluated by a neutral committee. During the closing ceremony of the conference, it was announced that the Arab Journal of Plant Protection won the first prize and the Arab American University Research Journal won the second prize. Photo shows Dr. Khaled Makkouk receiving the Certificate and Plate of the Arab Impact Factor Award from Dr. Amr Ezzat Salama, Secretary General, Union of Arab Universities and Dr. Mahmoud Abdel Aty, Conference Chairman and the head of the Arab Impact Factor project.

Meeting of some Task Force members Involved in Writing an ASPP Report on: "Plant Protection Challenges in the Arab Countries: 2050 vision"

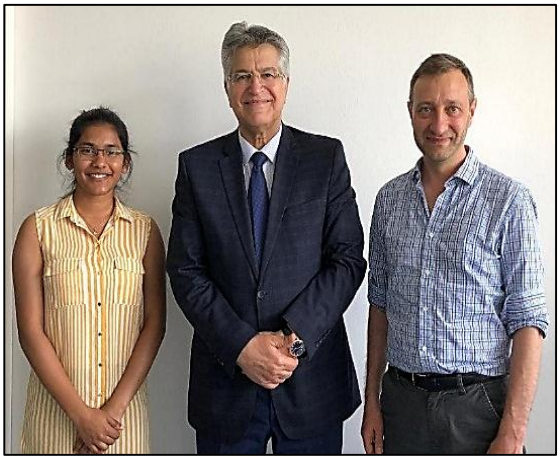
A meeting was held on June 24, 2019 in Safir Hotel, Dokki, Cairo, Egypt and attended by some members of the Task Force working on the ASPP report on: "Plant Protection challenges in the Arab countries: 2050 vision". This report is being prepared by ASPP on the occasion of declaring 2020 as the Plant Health year by the UN. Nine Task Force members (shown in the photo from right to left) attended the meeting and those were: Dr. Hassan Faraj Dahi, Dr. Ahmed Husein El-Heneidy, Dr. Mousaad Kotb Hasanein, Dr. Alaadin Hamwiyeh, Dr. Ali Suleiman (standing), and Dr. Sahar Abdo Zayan, Dr. Khaled Makkouk (Task Force Coordinator), Dr. Amani Abou Shall, Dr. Shereen Alsayed Mouhamed Al-Nahhas (seated). During a five hours meeting, the participants discussed the first draft of the report and identified its weaknesses and possible ways to improve it. The participants also discussed the missing parts in the first draft and proposed names of colleagues who can professionally contribute to the missing parts. Such colleagues will be contacted within few days and get their agreement to join the task force team. Participants also agreed to submit their comments/improvements on the first draft to the task force coordinator within three months

Strengthening Collaboration between Arab and European Scientists in Plant Health Issues

The Euphresco network for phytosanitary research coordination, a section in the European Plant Protection Organization (EPPO), is a platform whose aims are to strengthen links between research and policy, to increase the visibility of plant health research activities and to catalyse international collaboration. Each year, Euphresco members identify a number of plant health research topics and seek for collaboration with research institutes, universities, private companies etc. worldwide. For more information on the topics proposed this year are published on the Euphresco website and can be reached using the following link: https://www.euphresco.net/funding/current_calls , in which a short topic description with information on the research activities to carry-out and on the organisations that have expressed interest so far are presented. Euphresco is looking to extend the collaboration to north African and Middle Eastern countries. To be involved in these projects requires only that the activities proposed are in line with the main topic description and that involved scientists are able to cover the activities they want to run; participation is possible through alignment of existing activities or through in-kind contribution. Thus, Euphresco will not provide funds itself (all the funds are local, national), but collaboration will allow experts to build their professional networks, to have their activities recognised internationally, to benefit from the knowledge/information exchange with the other organisations involved in projects, and to increase the impact of their research outputs. For more information on the topics and for any expression of interest, do not hesitate to contact the coordinator of the Euphresco network at the European and Mediterranean Plant Protection Organization: Dr Baldissera GIOVANI bgiovani@euphresco.net .

Visit of Georg-August-University of Goettingen, Germany

The president of the Arab Society for Plant Protection, Ibrahim Al-Jboory visited Goettingen University where he met Professor Dr. Michael Rostas, head of the Department of Crop Science, Agricultural University inviting him to attend the 13th Arab Conference of Plant Protection in Tunisia 2020 and discussed the scientific English program adopted by the university. Professor Rostas explained the researche activities going on in the department which focused on plant pest interactions, semiochemicals, host plant resistance, biological control and other activities.Dr. Jboory during his visit, met few Arab students in the department. He invites the governmental authorites in the Middle East and Gulf countries to encourage their sudents to join such presigeous university. http://www.uni-goettingen.de/en/40478.html



FIRST ANNOUNCEMENT- 13th Arab Congress of Plant Protection

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

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

"Plant Health for Secure and Safe Food"
Organized by
Arab Society for Plant Protection
ACPP2020
www.acpp-aspp.com

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

Welcome to Green Tunisia


Invitation to join

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

Congress Themes

1. Insects, mites and rodents economic pests
2. Plant diseases and their control
3. Ecology and epidemiology of plant diseases
4. Natural enemies and their role in pest control
5. Weeds and their control
6. Pesticides
    - Biopesticides and food chain
    - Compatibility between biopesticides and biological control components
    - Safe use of Agricultural chemicals
7. Postharvest pests
8. Quarantine and phytosanitary measures
9. Integrated pest management
10. Genetic engineering and pest control
11. Beneficiary insects (bees and silk worm)

Organizing Committee

Asma Najar (Chairperson), Tunisia
Sonia Bouhachem, Tunisia
Naima Mahfoudhi, Tunisia
Thouraya Souissi, Tunisia
Kaouthar Lebdi Grissa, Tunisia
Ben Jamaa Mohamed Lahabib,
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	• Field trip

November 4, 2020	
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 for invited research sessions	December 31,2019

Registration Form

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

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

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

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

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.

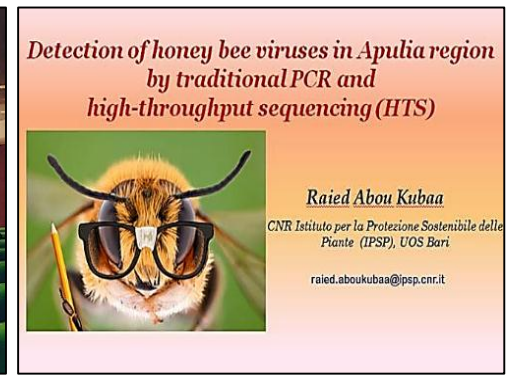
Thursday, November 5, 2020
Symposium III: Advances in Molecular Plant Protection and its Applications in Pest Management
1- Molecular interaction between plants and beneficial microbes and its application on development of new bio-pesticides and bio-fertilizers. Dr. Mateo Lorito, University of Naples 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

Detection of Honey Bee Viruses in Puglia Region by Traditional PCR and High-Throughput Sequencing

In the Proceedings of the Italian Society for Virology held at the Polytechnic of Bari from 27 to 28 May 2019, **Dr. Raied Abou Kubaa,** a researcher in the Italian National Research Center presented a new research entitled: Detection of Honey Bee Viruses in Puglia Region by Traditional PCR and High-Throughput Sequencing. Dr. Annalisa Gianpetruzzi and Prof. Rocco Addante from University of Bari Aldomoro and Meriem Ahdouga a researcher from the Mediterranean Agronomic Institute of Bari contributed in this work.The continuous losses of honeybee colonies have encouraged further investigation on honey bee infecting viruses. In 2017 and 2018, we investigated the presence of honeybee viruses in more than 35 apiaries located in Puglia region. RNA was extracted from a pool of 10 adult bees collected in each apiary then tested by RT-PCR. Results showed the presence of different viruses commonly infecting bees of which some were found for the first time in Italy. From two apiaries where dead bees and trembling bees found in front of the hives, specimens were collected and investigated by construction of total RNAseq libraries and subsequent high-throughput sequencing (HTS). Raw reads were quality-checked by FastQC. Paired reads of 101bp were assembled by metaSPAdes version 3.9.0 49 using "only-assembler" parameter and multiple kmers (-k 71, 81, 91). Obtained contigs were searched for similarity against "viruses" database by Blastn. Preliminary HTS and bioinformatic analysis retrieved the full length (~8450 bp) sequence of the Black queen cell virus (BQCV) showing high similarity (~94.11%) with the Hungarian isolate EF517515. Ongoing analysis showed other contigs with high similarity to *Apis mellifera* filamentous virus, a large double stranded DNA baculovirus-like virus which we found widely distributed in Apulia (up to 91% in 2017). The present work reports the first full genome sequence of the Italian isolate BQCV-IT1. HTS technology proved to be a rapid tool for identifying viruses in honeybees. Further investigations are in progress to understand the role of these viruses on honeybee health in Puglia. [**Raied Abou Kubaa, 2019]**



Volatile Unsaturated Hydrocarbons Emitted by Seedlings of Brassica Species Provide Host Location cues to Bagrada hilaris.

Bagrada hilaris Burmeister, is a stink bug native to Asia and Africa and invasive in the United States, Mexico, and more recently, South America. This species can cause serious damage to various vegetable crops in the genus *Brassica*, with seedlings being particularly susceptible to *B. hilaris* feeding activity. In this study, the role of volatile organic compounds (VOCs) emitted by seedlings of three *Brassica* species on the host preference of *B. hilaris* was evaluated. In dual choice arena and olfactometer bioassays, adult painted bugs preferred *B. oleracea* var. botrytis and *B. napus* over *B. carinata*. Volatiles from *B. oleracea* seedlings were collected and bioassayed with *B. hilaris* adults and late stage nymphs, using electroantennographic (EAG) and behavioral (olfactometer) techniques. When crude extracts of the VOCs from *B. oleracea* var. botrytis seedlings and liquid chromatography

fractions thereof were bioassayed, *B. hilaris* adults and nymphs were attracted to the crude extract, and to a non-polar fraction containing hydrocarbons, whereas there were no responses to the more polar fractions. GC-MS analysis indicated that the main constituents of the non-polar fraction was an as yet unidentified diterpene hydrocarbon, with trace amounts of several other diterpene hydrocarbons. The major diterpene occurred in VOCs from both of the preferred host plants *B. oleracea* and *B. napus*, but not in VOCs of *B. carinata*. Our results suggest that this diterpene, alone or in combination with one or more of the minor compounds, is a key mediator in this insect-plant interaction, and could be a good candidate for use in lures for monitoring *B. hilaris* in the field**.[Salvatore Guarino[1], Mokhtar Abdulsattar Arif[1] ,Jocelyn G. Millar[2] , Stefano Colazza[1] , Ezio Peri[1] , [1]Dipartimento di Scienze Agrarie, Alimentari e Forestali, Università degli Studi di Palermo, Palermo, Italy, [2] Department of Entomology, University of California, Riverside, California, United States of America, Plos one,2018]. (Doctorate,2018), (Iraq-,Italy)**

Effects of Abscisic Acid and Salicylic Acid on Gene Expression in the Antiviral RNA Silencing Pathway in Arabidopsis.

The RNA silencing pathways modulate responses to certain stresses, and can be partially tuned by several hormones such as salicylic acid (SA) and abscisic acid (ABA). Although SA and ABA are often antagonistic and often modulate different stress responses, they have similar effects on virus resistance, which are partially achieved through the antiviral RNA silencing pathway. Whether they play similar roles in regulating the RNA silencing pathway is unclear. By employing coexpression and promoter analyses, we found that some ABA- and SA-related transcription factors (TFs) are coexpressed with several *AGO*, *DCL*, and *RDR* genes, and have multiple binding sites for the identified TFs in the queried promoters. ABA and SA are antagonistic with respect to the expression of *AGO1* and *RDRs* because ABA was able to induce these genes only in the SA mutant. Nevertheless, both hormones showed similarities in the regulation of other genes, for example, the induction of*AGO2* by ABA was SA-dependent, indicating that ABA acts upstream of SA in this regulation. We inferred that the similar effects of ABA and SA on some genes resulted in the redundancy of their roles in resistance to bamboo mosaic virus, but that the two hormones are antagonistic with respect to other genes unrelated to their biosynthesis pathways**.[Mazen Alazem ,Kook-Hyung Kim and Na-Sheng Lin, Seoul National University, Seoul 08826, Korea, and Institute of Plant and Microbial Biology, Academia Sinica, Taiwan, International Journal of Molecular Sciences , 20(10), 2538,2019]**. **(Syria-Koria).** https://doi.org/10.3390/ijms20102538

Development and Validation of a Loop-Mediated Isothermal Amplification technique (LAMP) for the detection of *Spiroplasma citri,* the causal agent of citrus stubborn disease.

Citrus stubborn disease (CSD) is caused by a Gram-positive bacterium, *Spiroplasma citri*, and is an endemic, but manageable, citrus disease. CSD-affected trees are low yielding but a key problem is that its symptoms are similar to and easily mistaken for Huanglongbing (HLB), a devastating citrus disease controlled by quarantines and eradication. Therefore, a rapid and simple test for *S. citri* is needed to readily distinguish CSD from HLB. To this end, a Loop-Mediated Isothermal Amplification technique (LAMP) was developed to detect *S. citri*, targeting the spiralin gene. The protocol was optimized for crude plant extracts from infected trees to allow on-site field testing. The LAMP assay showed high specificity to *S. citri* and detected DNA to a level of 100 fg/µl with no inhibition by crude plant extracts. Although the LAMP assay was 9 times less sensitive than qPCR with purified DNA templates, it performed well in field validations using a portable BioRanger device with citrus crude extracts. The LAMP assay showed detection efficiency and percentage yes/no calls similar to those obtained by real time PCR conducted with DNA extracted and purified from the same sample. The LAMP procedure allows growers, pest control or diagnostic services to rapidly test for *S. citri* in the field without a laboratory or DNA purification. **[Mounira Inas DRAIS[1,2], Yogita Maheshwari[3], Vijayanandraj Selvaraj[3], Leonardo Varvaro[2], Raymond Yokomi[3] and Khaled Djelouah[1], [1]CIHEAM - Istituto Agronomico Mediterraneo, Via Ceglie 9, 70010 Valenzano (BA), Italy; [2]Department of Agriculture, Forests, Nature and Energy, Tuscia University, Viterbo, VT 01100, Italy; [3]United States Department of Agriculture-Agricultural Research Service, San Joaquin Valley Agricultural Sciences Center, Parlier, CA 93648-9757, USA, European Journal of Plant Pathology, P1-10, 2019]. (Algeria-USA).** https://doi.org/10.1007/s10658-019-01755-6

Sequential Sampling Plans for Aphids on Winter Canola.

This project has been submitted to the Oklahoma State University in partial fulfillment of the requirements for the degree of Doctor of Philosophy by the researcher Aqeel Adnan Alyousuf. Canola, *Brassica napus* is an increasingly important human food and animal forage due to the valuable oil and protein; canola seed is comprised of approximately 44% oil and 20-30% protein. A central tenet of IPM is the establishment of economic threshold (ET) levels. Enumerative (Green`s fixed precision and Iwao`s methods) and binomial sequential sampling plans were developed with two stop lines around the ET for aphids *Brevicoryne brassicae*, *Lipaphis erysimi* and *Myzus persicae* on winter canola in Oklahoma, USA. These plans will allow the sampler to determine whether aphid population intensities in canola fields are below or above the ET. If the cumulative number of aphids is less than the lower stop line, sampling is terminated and no management is recommended. If the cumulative number of aphids is greater than the upper stop line, sampling should be stopped and foliar insecticide is recommended. Or, more samples are needed if the total numbers of aphids remain between the two stop lines. These types of sequential sampling plans can reduce costs by more than 50%, because the reduction in time and number of samples translates directly to the costs. **[Aqeel Adnan Alyousuf, (Ph.D, 2019)].** **(Iraq-USA).** Dr. Aqeel graduated in 2018 from (IPM/ Entomology), Oklahoma State University, Oklahoma, USA worked between 2013-2018 as a Graduate Research Assistant (Oklahoma State University) in Canola-Wheat IPM and Row Crops Project:

- Wheat, bird cherry oat aphids Rhopalosiphum padi
- Sorghum, sugarcane aphids Melanaphis sacchari
- Soybean, soybean aphids Aphis glycines
- Soybean, two-spotted mites Tetranychus urticae
- Corn, Bank grass mites
- Pasture, insecticide evaluations for grasshopper control in Bermuda grass pasture.

Dr. Aqeel is working now at Basra University, Iraq.

Cold Response of the Mediterranean Fruit Fly (*Ceratitis capitata*) on a Lab Diet.

Cold treatment at 0.0 °C in different exposure durations (0–12 days) was applied to the Mediterranean fruit fly *Ceratitis capitata* (Wiedemann) fed on a laboratory diet. The examined developmental stages were early eggs (<6 h), late eggs (>42 h), first instar, second instar and third instar larvae. Pupation, adult emergence and sex ratios of survived flies were investigated to study the *C. capitata* responses to low temperature treatments. The results showed that exposure time at low temperature has a clear effect on pupation and adult emergence. Based on pupation ratios, the first and third instar are the most cold tolerant stages, with LT99 = 7.3 for both of them. Cold tolerance at both stages are very close and no significant differences were detected. There were no significant differences on *C. capitata* sex ratios among different stages after treatment. This study improves our understanding of *C. capitata* responses to cold treatment, which may assist in the improvement of the current treatment strategies to control this destructive horticulture pest species.**[Farhan J.M. Al-Behadili, Vineeta Bilgi , Junxi Li , Penghao Wang , Miyuki Taniguchi , Manjree Agarwal , Yonglin Ren , and Wei Xu , Insects, 10(2), 48, 2019]** https://doi.org/10.3390/insects10020048. **(PhD Candidate, 2019)].** **(Iraq-Australia)**

Acibenzolar-S-methyl against Botrytis Mold on table Grapes in Vitro and in Vivo.

The objective of this work was to investigate the effect of the resistance inducer Acibenzolar-S-methyl (ASM), against *Botrytis* mold on table grapes *in vitro* and *in vivo*. To assess the effect of ASM on mycelial growth *Botrytis cinerea*, different concentrations (0.125, 0.25, 0.5, 1.0, 2.0 and 3% w:v) were tested. Treatments were set up in triplicate, in a completely randomized experimental design, and replicated twice. Results were expressed in minimum inhibitory concentrations and effective dose per 50% response of mycelial growth. Healthy table grapes (cvs. Italia and Benitaka) were harvested at full ripe to evaluate the ASM 1% effect against gray mold under

artificial conditions. Bunches were split into two groups in order to perform two types of experiments (spray or immersion). For both trials, treated bunches were arranged in carton boxes and stored at 2±1 °C, for one month, followed by one week of shelf-life at 22±2 °C. In order to evaluate the ASM effect against gray mold under field conditions, ASM 1% was sprayed on both cultivars one week before harvest. Grapes treated with iprodione 0.2% with three applications during the season were included as a standard chemical control. Bunches were harvested at full ripe, arranged in carton boxes and submitted to a cold storage process as described previously. Results for the *in vitro* experiments showed that the minimum inhibitory concentration of ASM was achieved by 3% and the ED50 was 0.04%. Under artificial conditions, for both cultivars, the efficacy of ASM was higher when the grapes were immersed than sprayed. A significant difference was observed for ASM as compared with control. Regarding the effect of ASM against gray mold in the field, the incidence of gray mold was recorded for both cultivars. For 'Italia' and 'Benitaka' grapes, ASM, iprodione and sulfur dioxide pad reduced the incidence of gray mold by 85, 79 and 77%, and by 80.5, 73 and 82%, respectively. As for the physico-chemical berry properties, none of the treatments were significantly different from the control for total soluble solids, titratable acidity and color index. A single ASM treatment applied one week before harvest is effective for controlling gray mold in 'Italia' and 'Benitaka' table grapes. **[Khamis Youssef, Sergio Ruffo Roberto, Ronan Carlos Colombo, Marcelo Giovanetti Canteri and Kamel Ahmed Abd-Elsalam, Agronomy Science and Biotechnology, Volume 5,1: pp 52–61, 2019]. (Egypt- Brazil),**

Efficacy of Alkaline and Acidic Electrolysed Water Generated by some Salt Solutions against Gray Mold of table Grape: pre and Postharvest Applications.

The objectives of the this research were to assess the activity of alkaline (alEW) and acidic electrolysed water (acEW), *in vitro* and *in vivo*, against the development of gray mold caused by *Botrytis cinerea* Pers. on table grape cv. Crimson seedless and to investigate these treatment on grape quality. Thirteen salt solutions (potassium bicarbonate, potassium sorbate, sodium silicate, EDTA-Fe, EDTA-Ca, sodium bicarbonate, sodium carbonate, potassium carbonate, potassium phosphate dibasic, potassium dihydrogen phosphate, ammonium molybdate, sodium metabisulphite, sodium chloride), most of them are generally recognized as safe (GRAS) compounds, were used to generate alEW and acEW. *In vitro* results showed that in alEW, sodium carbonate and potassium sorbate were the most effective salts reducing the percentage of colony forming units (CFUs) by 67.3 and 63.7%, respectively. In acEW, sodium carbonate, potassium bicarbonate, sodium silicate, potassium sorbate and EDTA-Fe were the most effective salts reducing CFUs by 88, 86, 85, 89 and 84%, respectively. Under artificial infection, at the end of cold storage, for alEW, the percentage of reduction ranged from 55-91.7% and potassium carbonate gave the best results against the grapes gray mold (91.7%). For acEW, the percentage of reduction ranged from 77-98% and ammonium molypdate gave the best results against gray mold (98%). Electrolysed water generated by potassium sorbate, sodium carbonate and sodium metabisulphite were the most effective salts against development of gray mold disease under natural infection. In most cases, the results of the present research showed that alEW and acEW did not influence the physicochemical properties of berry quality. This study confirms that electrolysed water is an effective treatment and has a good control activity against gray mold of table grape and it demonstrates that certain salts improve the electrolysis potential **[Youssef K., Mustafa, Z.M.M., Al-Essawy A., 2018, Journal of Phytopathology and Pest Management, 5(1): 1-21, Plant Pathology Research Institute, ARC, Egypt].**

Comparison and Combination of Thermal, Fluorescence, and Hyperspectral Imaging for Monitoring *Fusarium* Head Blight of Wheat on Spikelet Scale

Optical sensors have shown high capabilities to improve the detection and monitoring of plant disease development. This study was designed to compare the feasibility of different sensors to characterize *Fusarium* head blight (FHB) caused by *Fusarium graminearum* and *Fusarium culmorum*. Under controlled conditions, time-series measurements were performed with infrared thermography (IRT), chlorophyll fluorescence imaging (CFI), and hyperspectral imaging (HSI) starting 3 days after inoculation (dai). IRT allowed the visualization of temperature differences within the infected spikelets beginning 5 dai. At the same time, a disorder of the photosynthetic activity was confirmed by CFI via maximal fluorescence yields of spikelets (Fm) 5 dai. Pigment-specific simple ratio PSSRa and PSSRb derived from HSI allowed discrimination between *Fusarium*-infected and non-inoculated spikelets 3 dai. This effect on assimilation started earlier and was more pronounced with *F. graminearum*. Except the maximum temperature difference (MTD), all parameters derived from different sensors were significantly correlated with each other and with disease severity (DS). A support vector machine (SVM) classification of

parameters derived from IRT, CFI, or HSI allowed the differentiation between non-inoculated and infected spikelets 3 dai with an accuracy of 78, 56 and 78%, respectively. Combining the IRT-HSI or CFI-HSI parameters improved the accuracy to 89% 30 dai. The full text can be found at. [**Ali Al Masri, PhD (Syria-Germany),** Spatial Business Integration GmbH and colleagues from the University of Bonn and the Institute of Sugar Beet Research in Germany **2019].** https://www.mdpi.com/1424-8220/19/10/2281

Potential Microbial Control of Xylophagous Pests with Entomopathogenic Nematodes and Fungi.

The effects of entomopathogenic nematodes (Steinernematidae and Heterorhabditidae) and fungi strains (*Beauveria bassiana*) were evaluated in laboratory assays against larvae of four xylophagous pests: the Asparagus moth *Parahypopta caestrum*, the European goat moth *Cossus cossus*, the pine longhorn *Arhopalus syriacus* and the black Buprestid *Capnodis tenebrionis*. Due to their biology and ethology, these insects may be included in the category of pests residing in cryptic habitats. The control of these species is very difficult, due to the inability of chemical pesticides to penetrate the cryptic habitats and reach the targets. The results showed that all the nematodes and fungal strains affected the insect survival. *Steinernema feltiae* and *Beauveria bassiana* showed the best performances. Considering the lack of effective chemical control means, the microbial control of the xylophagous pests by EPNs and EPFs reveals promising perspectives. Nematodes and fungi are able to penetrate the cryptic habitats because they are living organisms and may be horizontally transmitted by infected hosts. The distribution of EPF as preventive control method and the injection of EPNs suspensions to reach and infect the larvae inside the wood galleries can be a combined sustainable control system. **[El Khoury, Y.[1,2]; Noujeim, E.[2]; Ravlić, J.[3]; Oreste, M.[1]; Addante, R.[1]; Nemer, N.[4] Tarasco, E.[1] ,** International Congress on Invertebrate Pathology and Microbial Control, Valencia July 28th to August 1st, 2019,[1]Department of Soil, Plant and Food Sciences, University of Bari "Aldo Moro", via Amendola 165/A, 70126 Bari (Italy), [2]National Center for Marine Sciences, National Council for Scientific Research -CNRS, P.O.Box 11-8281, Ryad El Solh 11072260, 59, Zahia Selman Street, Beirut, Lebanon, [3]Department of Phytomedicine, University of Zaghreb Faculty of Agriculture, Svetošimunska cesta 25, 10000 Zagreb, Croatia, [4]Holy Spirit University of Kaslik, Faculty of Agricultural and Food Sciences, PO Box 446, Jounieh, Lebanon, yara.elkhoury@uniba.it

Dr. Hany Mohamed Heikal in a Postdoctorate fellowship in India

Dr. Hany Mohamed Heikal, Associate professor of Acarology, Economic Entomology and Agricultural Zoology Department, Faculty of Agriculture, Menoufia University, Egypt has joined the Post Doctoral Fellow for six months in the Research and Training Fellowship for Developing Country Scientists (RTF-DCS) scheme of Government of India, Department of Science & Technology, (International Multilateral and Regional Cooperation Division) (FICCI). He is working on the guidance of Dr Manmeet Brar Bhullar, senior Acarologist, testing plant extracts,organic materials and predators to control red spider mite.

A Regional Training Course on the Bacterium *Xylella fastidiosa*, the Causal Agent of Olive Decline Disease.

A training course on the bacterium Xylella fastidiosa, the causal agent of olive decline, was organized at the Order of Engineers in Beirut during the period 1-5 July, 2019. 40 participants from different agricultural sectors in Lebanon joined the course, which was organized by the Lebanese Agricultural Research Institute (LARI), the Agriculture Division of the Engineers Order in Beirut, and the Mediterranean Agronomic Institute, Bari, Italy. The speakers in the opening session were his excellency the Minister of Agriculture Dr. Hasan Allakis, the President of the Engineers Order in Beirut Dr. Jad Tabet, the Director General of LARI Dr. Michel Efram, the Coordinator of the Cure FX European project Dr. Maroun Moujaber, and the Director General of the Ministry of Agriculture Dr. Louis Lahoud. In the opening session, all the speakers stressed on the importance of being alert and prepared to deal with the potential spread of olive decline, a disease that already killed more than 11 million olive trees in southern Italy.The training course continued for three days, and trainers from Italy, Belgium, Spain, and Lebanon, all well-known experts on Xylella fastidiosa, focused their interventions on different aspects of the disease; diagnosis, spread by insects, control including host resistance and how to contain the disease in case it reached Lebanon. In the fourth day, participants visited the Plant Protection Department, LARI, headed by Dr. Elia Choueiri, where significant efforts were put in the demonstration of the molecular methods and sample preparations by Dr Toufiq Elbeaino (CHIEAM-BARI) and Dr. Raied Abou Kubaa (IPSP-CNR-BARI). In the fifth day, the participants joined a field trip to an agricultural cooperative in the town of Dar Beashtar, Koura County, a region well known with large areas planted with olive trees.

Researchers Team Performing field Surveys on Olive Trees and other Host Species in Lebanon

Within the framework of international cooperation between the Lebanese Agricultural Research Institute (LARI) represented by Dr. Elia Chouweiri (head of department of plant protection at Tal Amara) and Eng. Zinette Moussa (head of laboratory of entomology at Fanar) and the National Center for Agricultural Research (CNR) at Bari – Italy, represented by Dr Raied Abou Kubaa and under the project " Capacity Building and Raising Awareness in Europe and in Third Countries to Cope with *Xylella fastidiosa* – " CURE-XF " funded by H2020 (Marie Curie) under the project number 934313, the mentioned team has been performing, in collaboration with the Ministry of Agriculture (MoA) in Lebanon, field surveys on olive trees and other host species in different Lebanese regions during July-August 2019. Serological and molecular analyses of collected samples are being done in the laboratory of plant protection at LARI. The aim of this survey is to detect the presence/absence of *Xf* and putative vectors in order to prevent the introduction of this disease to Lebanon and the Middle East. By: **Zinette Moussa, Raied Abou Kubaa, 2019.**

Saving Mediterranean Olives from a Destructive Disease

FAO is helping prevent *Xylella fastidiosa* from spreading to the Near East and North Africa

Key Facts

Xylella fastidiosa is a bacterial disease that in recent years has managed to establish itself in spots along the Mediterranean, where it is attacking economically important crops such as olive, citrus, stone fruits and grapevines. With no known cure, the disease threatens to spread further to the Near East and North Africa (NENA) region. To help smallholder farmers protect their crops and livelihoods, FAO is supporting efforts in NENA countries to raise awareness of the threat and implement technologies and techniques that can help prevent, detect and contain this deadly disease.

In 2013, Italian researchers made a troubling discovery: one of the world's most destructive plant diseases, normally found in the Americas, had made its way to Italy's olive trees. With no known cure, the pathogen has already affected more than 10 million trees in Italy's south-eastern tip. If not properly contained, it threatens to spread across the entire Mediterranean basin. The Italian government contracted national research institutions and the International Center for Advanced Mediterranean Agronomic Studies (CIHEAM) to survey and contain *Xylella fastidiosa*. However, other Mediterranean countries are at great risk if the disease spreads further. Not only olive trees but also more than 500 other plant species are hosts for the various strains of the bacterium. If not prevented, smallholder farmers in the NENA region could have their livelihoods devastated and national economies destabilized by the potential spread into the region. Because of these risks, FAO has launched a project to support NENA countries in their efforts to prevent the introduction and spread of this disease.

Xylella fastidiosa: a spreading threat

Xylella fastidiosa has long caused problems in the Americas—where the cost of its damage is estimated at hundreds of millions of dollars each year. Beyond olive trees, different strains of *Xylella fastidiosa* can also harm grapes, stone fruits, citrus and ornamental plants. The disease is difficult to quarantine because the bacterium is transmitted by insects and infected trees take a long time to display symptoms, as the incubation period for *Xylella fastidiosa* can last from seven months to more than a year. If an insect sucks sap from an infected tree, it can carry bacteria to other trees. However, the disease also spreads through the transport of infected plants, especially by ornamental plants which may contain the bacteria without showing symptoms. Symptoms of a *Xylella fastidiosa* infection include weakened branches, dried leaves and hardened, shrunken fruits. Infected trees effectively experience an internal drought: multiplying bacteria latch onto the xylem tubes that transport water and nutrients, choking off the tree's extremities.

Innovative tools

In order to mitigate the potential threat of *Xylella fastidiosa* to countries across the Mediterranean, FAO is supporting preventative efforts in Algeria, Egypt, Lebanon, Libya, Morocco and Tunisia. By implementing modern technologies for detection, FAO is helping countries test imported planting materials – the main pathway for the introduction of the bacteria from long distances – in a more accurate, economic and simplified way. An important component of the project was the introduction of the innovative Loop Mediated Isothermal Amplification (LAMP) device, which can test plants and insects in real-time to detect any molecules associated with the disease. Portable LAMP devices are used with tablets as the interface to the device, running tests and receiving results. These devices enable farmers and scientists to immediately identify and report on *Xylella fastidiosa* in the field, without waiting to hear from a lab.

Spreading the word

Media campaigns and press conferences have helped spread information about *Xylella fastidiosa*, with effective outreach over social media, radio and TV in Egypt and Libya. In addition, regional awareness-raising days were organized in the NENA countries, targeting technicians, farmers, nursery workers, students and customs inspectors to be able to detect and address plants infected with the bacteria. To continue providing vital information, a number of communication channels were set up (including toll-free telephone hotlines, e-mail, WhatsApp and Facebook) for stakeholders to share information and address questions relating to the management of the disease.FAO has also organized a series of training sessions for stakeholders on surveillance, diagnosis and management practices relating to *Xylella fastidiosa*. These workshops assisted each country in organizing national and regional awareness days, as well as training sessions for diagnosing and monitoring *Xylella fastidiosa*. In turn, these events reached additional 3 858 participants (of which 942 were women), including specialists, researchers and farmers.

Prevention is the only way

Despite countermeasures being taken, the disease continues to kill olive trees in Italy and has spread to Spain and France. So far, it has not been reported in North Africa and the Near East. To prevent the disease from making further inroads, FAO is assisting at-risk countries in updating their phytosanitary legislation and strengthening phytosanitary measures at ports of entry to prevent its introduction through trade. In the worse case scenario, FAO is also helping countries to develop contingency plans if any detection of the disease occurs. By establishing coordinated regional surveillance systems, organizing international communication about risks and improving capacities to detect and respond to the disease, FAO hopes to prevent its introduction into new territories. As part of this prevention effort, FAO has developed a dedicated mobile application (XylAppNENA) and database for each country to collect field data. Despite the difficulties in managing the disease, preventative measures and early detection greatly reduce the risk and spread of infection. Containing *Xylella fastidiosa*means greater stability and yields for farmers across the Mediterranean—and is good news for olive-lovers worldwide.
http://www.fao.org/in-action/saving-mediterranean-olives/en/

General News

National Agricultural Scientific Symposium for Postgraduate Studies, Tishreen University, Lattakia, Syria.

Under the theme of "Scientific Research in the Service of Development and Reconstruction", the Faculty of Agricultural Engineering held a scientific symposium under the title: The National Agricultural Scientific Symposium for Graduate Studies in Tishreen University, Lattakia, Syria, April 8, 2019, Prof. Dr. Georges Makhoul Dean of the Faculty of Agricultural Engineering and coordinator of the symposium Prof. Dr. Nabil Abo Kaf.

The session of the Department of Plant Protection was held in the conference Hall of the Faculty and chaired the session Prof. Dr. Nabil Abo Kaf Head of Department of Plant Protection and Dr. Malik Omran, Rapporteur, included the following presentations:

Eng. Mais Alkbaily presented a research entitled: Study of the effect of quinosol fungicide in tomato vascular wilt disease caused by *Fusarium oxysporum* f.sp. *lycopersici*. Supervising the research: Prof. Dr. Mohamed Tawil and Prof. Dr. Sabah Al-Maghribi.

Then display Eng. Waseem Fandah a research entitled: A Taxonomic study of some species of the genus of *Euphorbia* L. in Lattakia governorate. Supervising the research: Prof. Dr. Samir Tabbache and Dr. Dina Haddad.

Then offered Eng. Ritta AlHayek Research entitled: The effect of insecticides flubendiamide and chlorantraniliprole on larvae of the tomato borer *Tuta absoluta* in Laboratory conditions. Supervising the research: Prof. Dr. Samir Tabbache and Prof. Dr. Ahmed Kara Ali in cooperation with Prof. Dr. Mohammed Ahmed.

The Presentation Eng. Mouzahem ALDahoul Research entitled: The critical economic limit for wild mustard (*Sinapis alba* L.) and barley plants (*Hordeum vulgare* L.) on the lentil crop. Supervising the research: Prof. Dr. Samir Mohamed Tabbache and Dr. Bahaa ALRahban, in cooperation with Dr. Ghassan Al-Lahham.

Eng. Ghadah Zeini Presented Research entitled: Genetic diversity of *Heterorhabditis bacteriophora* Poinar derived from citrus orchards in Lattakia, Syria. Supervising the research: Prof. Dr. Nabil Abo Kaf and Dr. Mazen Al- Body in cooperation with Dr. Majda Mofleh.

Eng. Ola Adnan Njmah Presented research entitled: Effect of temperature and relative humidity on population dynamics of California red scale *Aonidiella aurantii* (Maskell, 1879) (Hemiptera: Diaspididae) in citrus orchards. Supervising the research: Prof. Dr. Ali Mohammed Ramadan and Dr. Hazem Dib.

Ola Barakat Salman Presented research entitled: Life cycle of spiny bollworm *Earias insulana* (Boisd.) on the red local okra and study of some morphological characteristics. Supervising the research: Prof. Dr. Mohammad Ahmad and Dr. Atia Arab.

Eng. Ramza Abdullah Presented Research entitled the effect of packing treatments on the incidence of storage fungi on orange Washington naval. Supervising the research: Prof. Dr. Abd Alrahman Khafata and Prof. Dr. Jamal EL Ahmad.

Eng. Dima Ghazalah Presented Research entitled: Study of the effect of natural and additional feeding on the strength of honeybee colonies (*Apis mellifera* L.) and its productivity of queens. Supervising the research: Prof. Dr. Khalil Moukayees and Prof. Dr. Ali Mohammed Ramadan.

Eng. Komait Al-Htra Presented research entitled: Survey study of soil fungi causing the roots rot of *Pinus brutia* & *Cupressus sempervirens* seedling in Latakia Governorate. Supervising the research: Prof. Dr. Abd Alrahman Khafata. It is worth mentioning that this symposium has contributed to refining the skills of graduate students in scientific research, presentation and declamation, and showing their activity and the results of their research, and highlighted the many modern technologies and their role in the development of agricultural production.

Note: the abstracts of the above mentioned research and presentations participating in the symposium were published on Tishreen University website http://www.tishreen.edu.sy/sites/default/files/1_86.pdf and http://www.tishreen.edu.sy/ar/node/3403

The 12th Internatinal Confrence of the Arab Beekeepers Union, 7-9 October 2019, Erbil, Kurdistan, Iraq.

New Published Books 2019

Fourth International Symposium on Biological Control of Bacterial Plant Diseases

Year of publication: 2019
Publisher: FAO
Place of publication: Rome, Italy
Pages: #70 p.
ISBN: 978-92-5-1316
Job Number: CA5311EN;

A collection of abstracts from the Fourth International Symposium on Biological Control of Bacterial Plant Diseases. Biological control is a key element of sustainable agriculture but also the central feature to protect biodiversity and reduce pollution in the world. The need to promote biological control of plant pests and disease becomes a necessity especially for pest and disease hard to control by using the conventional methods, bacterial disease are in the top list of those diseases. http://www.fao.org/publications/card/en/c/CA5311EN

Shopping and Agriculture Festival which hold in Baalback region-Lebanon

The Lebanese Agricultural Research Institute (LARI) has participated in the Shopping and Agriculture Festival which hold in Baalback region-Lebanon from July 28th to August 4thin.LARI presented the researchers activities in the fields of tissue culture, wheat, mushrooms production, seed bank and plant protection. The General Director, Dr. Michel Afram participated at the opening ceremony. In addition, researchers and agricultural engineers from LARI have presented lectures during the festival days.

SELECTED RESEARCH PAPERS

- **Biological Control of Spotted-Wing Drosophila (Diptera: Drosophilidae)—Current and Pending Tactics.** Jana C. Lee, Xingeng Wang, Kent M. Daane, , Kim A. Hoelmer, Rufus Isaacs, Ashfaq A. Sial, and Vaughn M. Walton, Journal of Integrated Pest Management, Volume 10, Issue 1, 2019, 13. https://doi.org/10.1093/jipm/pmz012.

- **Degradation of Postharvest Applied Fludioxonil in Pomegranate Fruit cv. 'Wonderful' and Efficacy on the Gray mould.** İbrahim Kahramanoğlu, Serhat Usanmaz and Turgut Alas, Vol.10 (2), pp. 20-23, February 2019. https://academicjournals.org/journal/JSPPR/article-abstract/2AFA23060057

- **Evaluation of the Storage and Drying Processes of Melissa officinalis L. leaves.** Rosana Gonçalves Rodrigues-das-Dores, Juliana Cristina Santos Almeida Bastos, Viviane Flores Xavier, Fernanda de Souza Marques, Fernando Luis Finger and Vicente Wagner Dias Casali. Vol.9 (8), pp. 98-103, October 2018. https://academicjournals.org/journal/JSPPR/article-abstract/6D0F79459057

- **Impact of Varroa Destructor and Deformed Wing Virus on Emergence, Cellular Immunity, Wing integrity and Survivorship of Africanized Honey Bees in Mexico.** Mariana Reyes-Quintanaa, Laura G. Espinosa Montañob, Daniel Prieto-Merlosb, Gun Koleoglua**,** Tatiana Petukhovaa, Adriana Correa-Benítezb , Ernesto Guzman-Novoaa Journal of Invertebrate Pathology, Volume 164, Pages 43-48, , June 2019.

PAPERS PUBLISHED IN THE ARAB JOURNAL OF PLANT PROTECTION (AJPP) VOLUME 37, ISSUE 2, JUNE 2019

Proceedings of an International Meeting: Innovative and Sustainable Approaches for the Control of Red Palm Weevil CIHEAM, Bari-Italy, 23-25 October 2018 ,Organized by CIHEAM Bari and FAO of the UN.

SURVEY

Automatic localization of phoenix by satellite image analysis
R. Cousin and M. Ferry (Spain) Pages 83-88
http://dx.doi.org/10.22268/AJPP-037.2.083088

QUARANTINE

Is policy paralysis on quarantine issues in the Near East and North Africa region leading to the buildup and spread of red palm weevil, *Rhynchophorus ferrugineus*?
S.B. Balijepalli and J.R. Faleiro (India) Pages 89-100

http://dx.doi.org/10.22268/AJPP-037.2.089100

NATURAL ENEMIES

***Billaea rhynchophorae,* a palm weevil parasitoid with global potential**
B. Löhr, A. Negrisoli and J.P. Molina (Colombia & Brazil) Pages 101-108
http://dx.doi.org/10.22268/AJPP-037.2.101108

CONTROL

The world situation and the main lessons of 30 years of fight against the red palm weevil
M. Ferry (Spain) Pages 109-118
http://dx.doi.org/10.22268/AJPP-037.2.109118

Studies on curative treatment of red palm weevil, *Rhynchophorus ferrugineus* Olivier infested date palms based on an innovative fumigation technique
S.R. Al Ballaa and J.R. Faleiro (Saudi Arabia & India) Pages 119-123
http://dx.doi.org/10.22268/AJPP-037.2.119123

A simple and low cost injection technique to protect efficiently ornamental Phoenix against the red palm weevil during one year
S. Gomez and M. Ferry (Spain) Pages 124-129
http://dx.doi.org/10.22268/AJPP-037.2.124129

Early detection and preventive control of *Rhynchophorus ferrugineus* (Coleoptera Curculionidae): a quarantine pest in Brazil
V.A. Dalbon, J.P.M. Acevedo, A.E.G. Santana, H.F. Goulart, I. Laterza, A. Riffel, A. Negrisoli Jr, B. Lohr and F. Porcelli (Brazil, Colombia & Italy) Pages 130-135
http://dx.doi.org/10.22268/AJPP-037.2.130135

Studies on service free semiochemical mediated technologies to control red palm weevil *Rhynchophorus ferrugineus* Olivier based on trials in Saudi Arabia and India
J.R. Faleiro, A.-M. Al-Shawaf, H.A.F. El-Shafie and S. Pai Raikar (India & Saudi Arabia) Pages 136-142
http://dx.doi.org/10.22268/AJPP-037.2.136142

Microwave heating: a promising and eco-compatible solution to fight the spread of red palm weevil
R. Massa, G. Panariello, M.D. Migliore, D. Pinchera, F. Schettino, R. Griffo, M. Martano, K. Power, P. Maiolino and E. Caprio (Italy) Pages 143-148
http://dx.doi.org/10.22268/AJPP-037.2.143148

Efficiency of food baits, synthetic attractants and trap type on *Rhynchophorus ferrugineus* (Olivier) trapping in palm plantations, Ismailia, Egypt by aggregation pheromone traps
A. El-Banna, M.K. Abbas, A. Hala and T.M. Ibrahim (Egypt) Pages 149-150
http://dx.doi.org/10.22268/AJPP-037.2.149150

Policies to control red palm weevil based on the recommendations of the Rome meeting
S. Al-Dobai (Italy) Pages 151-152
http://dx.doi.org/10.22268/AJPP-037.2.151152

Controversial aspects about red date palm weevil
H.Y. Al Ayedh and A.M. AlJber (Saudi Arabia) Pages 153-155
http://dx.doi.org/10.22268/AJPP-037.2.153155

Date palm value chain development and the control of red palm weevil in Egypt
M.K. Abbas and Th. Yaseen (Egypt) Pages 156-157
http://dx.doi.org/10.22268/AJPP-037.2.156157

The effect of preventive measures in reducing red palm weevil infestation
M.K. Abbas (Egypt) Pages 158-158
http://dx.doi.org/10.22268/AJPP-037.2.158158

INTEGRATED MANAGEMENT
Importance of field operations for reducing red palm weevil (RPW) infestation on date palm
M. Ben Salah (Oman) Pages 159-162
http://dx.doi.org/10.22268/AJPP-037.2.159162

Management of the Red Palm Weevil *Rhynchophorus ferrugineus* (Olivier) using sustainable options in Saudi Arabia
M. Ali-Bob (Saudi Arabia) Pages 163-169
http://dx.doi.org/10.22268/AJPP-037.2.163169

Overview of the gaps, challenges and prospects of red palm weevil management.
J.R. Faleiro, M. Ferry, Th. Yaseen and S. Al-Dobai (India, Egypt & Italy) Pages 170-177
http://dx.doi.org/10.22268/AJPP-037.2.170177

Red palm weevil (*Rhynchophorus ferrugineus* Olivier): Recent advances
F. Gonzalez, S. Kharrat, C. Rodríguez, C. Calvo and A.C. Oehlschlager (Costa Rica & Tunisia) Pages 178-187
http://dx.doi.org/10.22268/AJPP-037.2.178187

An effective strategy to obtain very rapidly the red palm weevil decline in an area planted with ornamental palms
M. Ferry, R. Cousin, D. Chabernaud and F. Ferrero (Spain & France) Pages 188-197
http://dx.doi.org/10.22268/AJPP-037.2.188197

BIOLOGICAL CONTROL
Efficacy of insect pathogenic fungi on mortality and development of *Rhynchophorus ferrugineus* (Olivier)
W. Wakil, M. Usman and S. Gulzar (Pakistan) Pages 198-199
http://dx.doi.org/10.22268/AJPP-037.2.198199

Is the use of entomopathogenic fungi a viable option for the control of Red Palm Weevil?
M. El Bouhssini. A.N. Trissi and Z. Kadour (Morocco & Syria) Pages 200-202
http://dx.doi.org/10.22268/AJPP-037.2.200202

FORECASTING
Red palm weevil monitoring and early warning system.
K. Cressman (Italy) Pages 203-204
http://dx.doi.org/10.22268/AJPP-037.2.203204

ECONOMIC IMPACT
The economic impact of red palm weevil *Rhynchophorusf errugineus* Olivier in Egypt
M.K. Abbas (Egypt) Pages 205-205
http://dx.doi.org/10.22268/AJPP-037.2.205205

Community preferences for the preservation of Canary Palm from Red Palm Weevil in the city of Bari
R. Sardaro, L. Roselli, R. Grittani, M. Scrascia, C. Pazzani, V. Russo, F. Garganese, C. Porfido, L. Diana and F. Porcelli (Italy)Pages 206-211
http://dx.doi.org/10.22268/AJPP-037.2.206211

- **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).

- **First report of the coccid *Microterys hortulanus* (Hymenoptera: Encyrtidae) in Syria**. A.T. Saleh, A.M. Basheer and H.A. Alrouz (SYRIA).

- **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).

- **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).

- **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).

- Effect of some biological control agents **and their integration with Tachigaren fungicide for the control of Rhizoctonia rot on cucumber plants.** Ahmed Al-Jbory Awf, Khalaf A.Mohamad and Zeyad Sh. Ahmed (IRAQ).

- **Hydrogen peroxide effectiveness in enhancing resistance to tomato Fusarium wilt caused by *Fusarium oxtsporum*.** Haidar Mohamed Nawar, Jasem Mahmoud Abed, Hadi Mahdi Abboud, Mustapha Dhari Jumaaand Ahmed Mushtaq Abdellatif (IRAQ).

- Investigation the level of olive farmers knowledge about integrated pest management (IPM) techniques in Al-sheikh Badr District at Syrian Coast. Lamees Saker, Mohammed Al- Abdulah, Abdulnabi Basheer (SYRIA).

- A Biological study on native isolates of the fungus *Beauveria bassiana* at different constant temperatures and the nature of their effects on potato tuber moth, *Phthorimaea operculella* (Zeller) females. Nisreen H. ALSaoud (SYRIA),

EVENTS OF INTEREST 2019-2020

8-12 SEPTEMBER, 2019	4th Meeting of the International Phytoplasmologist Working Group, Valencia, Spain. http://valencia2019.ipwgnet.org/doc/IPWG2019_Second-Circular.pdf
11-13 SEPTEMBER, 2019	7th International Entomopathogens and Microbial Control Congress in Kayseri Turkey. http://emc2019.erciyes.edu.tr/
23-25 SEPTEMBER ,2019	Global Conference on Plant Science and Research in Valencia, Spain. https://irisscientificgroup.com/conferences/plantscience/
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
23 - 26 OCTOBER, 2019	XI Encontro Brasileiro De Ecologia Química (EBEQ), Biannual Brazilian Meeting on Chemical Ecology at Federal University of Alagoas, Maceio, Brazil. https://evento.ufal.br/ebeq2019/
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
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
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:

Awatif Abdul- Fatah Hamodi (Iraq), Abdulnabi Mohamad Basheer(Syria), Mokhtar Abdulsattar Arif (Iraq-Italy), Luaay Kahtan Khalaf (Iraq-USA), Farhan J.M. Al-Behadili(Iraq), Nabil Abo Kaf (Syria), Mazen Alazem (Syria, Koria), Mounira Inas Drais(Algeria-Italy-USA), Meriem Ahdouga (Algeria-Italy), Aqeel Adnan Alyousuf (Iraq-USA), Hany M. El-Kawas (Egypt), Zeity M. (Syria) , Negm M. W. (Eygpt), Adnan A. Lahuf (Iraq), Hussein Ali Salim (Iraq), Aladdin Hamwieh(Syria), Khaled Djelouah (Algeria-Italy), Raied Abou Kubaa (Bari- Italy), Houda Boureghda (Algeria), Youssef Khamis (Egypt), Ali Al Masri (Syria-German), Azia Ajlan (Saudia Arabia), Zinette Moussa(Lebanon), Yara El Khoury(Lebanon) , Mamoon Alalawi (FAORNE), Lidia AbdelShahid, (FAORNE), Heba Tokali (FAORNE), Hany Mohamed(Egypt).

On behalf of the Arab Society for Plant Protection, I would like to thank Dr.Houda Boureghda for her active particiations providing the newsletter with Algerian researcher news.

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.

www.asplantprotection.org
www.ajpp.asplantprotection.org
www.acpp-aspp.com