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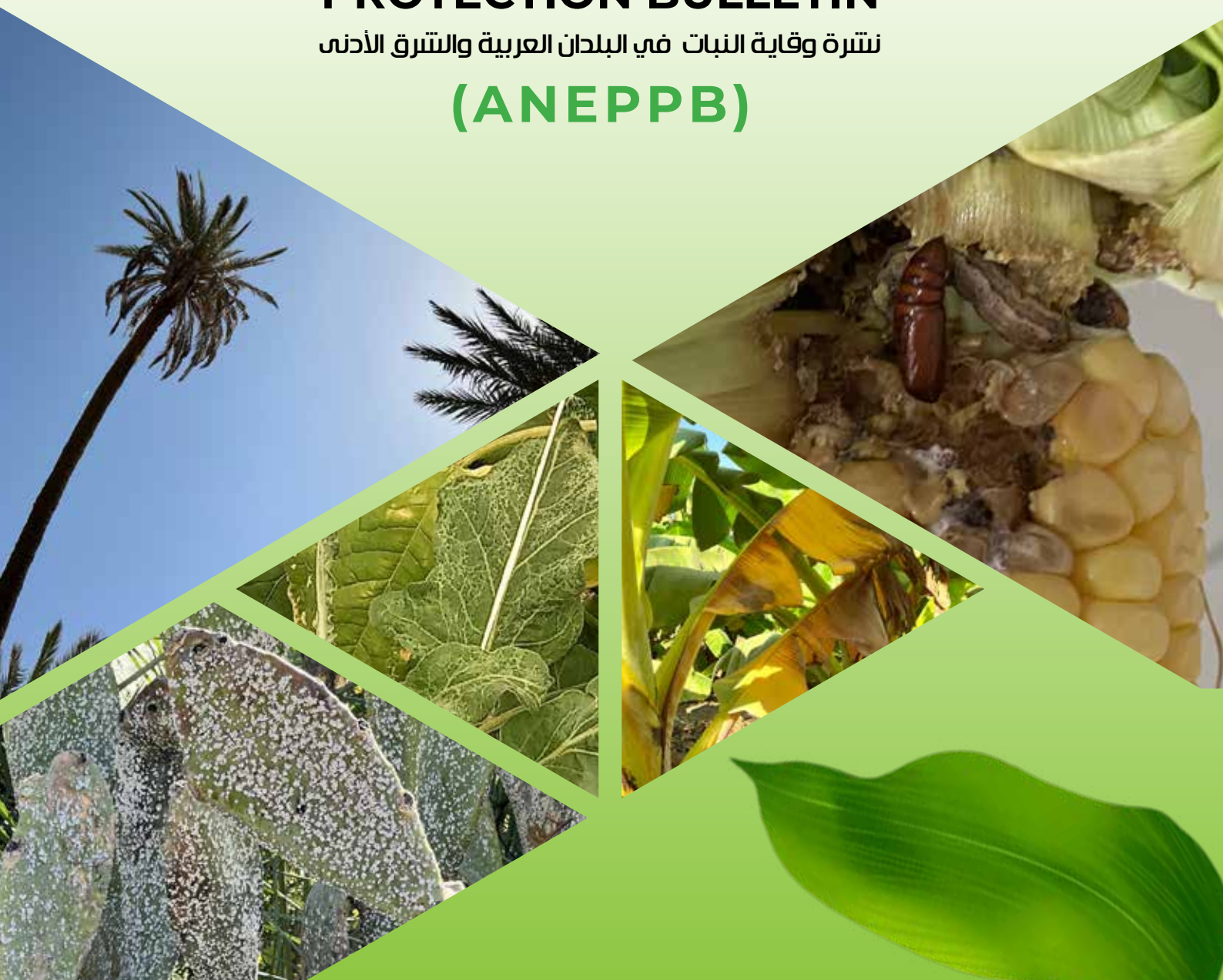
الجمعية العربية لوقاية النبات
ARAB SOCIETY FOR PLANT PROTECTION

ARAB AND NEAR EAST PLANT PROTECTION BULLETIN

نشرة وقاية النبات في البلدان العربية والشرق الأدنى

(ANEPPB)



ARAB AND NEAR EAST PLANT PROTECTION BULLETIN (ANEPPB)

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EDITORIAL

Nanopore sequencing of nucleic acids: an expanding tool for the diagnostics of plant viruses

Facing the increasing global trade of plant materials - and the parallel risk of plant pathogens spread - there is the need of quick, sensitive, cost effective and generic diagnostic methods to identify and contain causal agents of harmful diseases.

To assess the presence of plant virus genomes, sometimes erratic, low concentrated and even latent in symptomless plant tissues, the massive sequencing of total nucleic acids is, to date, an interesting method. Since 2014, the nanopore technology is on the market as a tool of choice, potentially responding to the above needs. Single-stranded nucleic acid (either DNA or RNA) from a library easily prepared from purified extracts is pushed inside an array of membrane-embedded nanopores by the action of motor proteins (which could unwind the dsDNA or hybrid RNA-cDNA). The passage of each single nucleotide along the polynucleotide chain through the pores is recorded by microelectrodes as a specific change of electric current, which runs across the membrane. A dedicated software (MinKNOW) supervises the data streaming, starting from preliminary base-calling. Remarkably, the WIMP ('what is in my pot') program is able to describe in real-time the taxonomic attribution of the produced sequences at the family and genus level, occurring in the first couple of hours of a short run (Fig.1).

Two relevant issues of the nanopore sequencing are the possibility of running a native RNA and that quite long molecules (over several kb) can be sequenced. The previous drawback of a relatively high error rate (compared to sequencing-by-synthesis methods) is going to be overcome by the development of new chemistry and flow-cell reading. The cost of the library preparation and running and the even portable size (the small flow-cell reader is linked to a personal computer) represent a breaking innovation that makes popular this system in low-resources and less structured laboratories. While the bioinformatic expertise is not a limitation, due to the spreading knowledge and the use of automated pipelines of analysis, the flexibility of applications offers a wide

frame in which the technique turns useful for a response in monitoring and detecting emerging or endemic plant diseases.

For surveillance purposes (as in the case of point-of-care checking at import-export entry points) or for the discovery of causal agents in virus-like diseases of unknown aetiology, the use of random-primed cDNA synthesis from rRNA-depleted total RNA or enriched dsRNA extracts, multiplexed by barcoding and supported by the correction of error rate with reference mapping, is also an advantage saving time and money.

From this foreword, the large nanopore sequencing application to a number of case studies in plant virology is conceivable. Bronzato Badial (2018) detected PPV in *M. persicae* and *Ca. Liberibacter asiaticus* in psyllid vector *D. citri* and plant tissues through whole transcriptome amplification, while Chalupowicz (2018) sequenced DNA or RNA isolated from plants of several families, artificially inoculated with known pathogens (e.g. bacteria, viruses, fungi, phytoplasma). The latter authors also tested tomato seeds for *C. michiganensis, P. corrugata* and *F. oxysporum*. Specific comparisons have been also performed for suitability among nucleic acid templates and library preparations. Pannareth (2021) compared different library preparation protocols and sequencing runtime lengths for diagnostics of *R. solanacearum* and PPV, as DNA and RNA extracts, respectively. Lieftig (2021) compared a 3' end RNA artificial polyadenilation with a dsRNA enrichment in CTV extracts from citrus, finding an obvious

bias of 3' sequences in oligo-dT synthesis against a more homogeneous genome coverage for the random-primed cDNA. These authors also encountered several case studies through nanopore sequencing, like kiwi affected by TSWV, sweet pea with mixed virus infection and the first detection of a liberibacter affecting strawberry. Similarly, Sun (2022) reviewed a list of applications in plant virus detection spanning from peach, yam, cassava and tomato. Another template comparison, done by Javaran (2023), about the use of direct cDNA sequencing from dsRNA versus those from depleted total RNA, showed that the demultiplexing is much more rapid from a dsRNA starting material and produced more virus-specific reads.

In the CNR IPSP (Bari) plant virology laboratory, we experienced nanopore sequencing through several protocols and virus-host combinations. In a preliminary test, total nucleic acids extracts from artificial infection of PPV and GVA on *N. benthamiana* were sequenced either as direct RNA from a 3' end or as a random-primed total cDNA (Fig. 2). While, in the first case, an average read length was about 800 nt but an accumulation of reads overrepresented the 3' end genome portion, in the second one a complete coverage was gained by homogeneous distribution of reads of 300nt in average. By using a few specific reverse primers along the genome, the sequence of a local isolate of ToBRFV was obtained (Abou Kubaa 2023), while the complete genome of pepino mosaic virus (PepMV) was also unexpectedly sequenced from the same ToBRFV library, suggesting that a low rate of off-target sequencing can usefully provide information on different viruses coinfecting the same sample. The application of quick nanopore sequencing for virus discovery was also assessed from various nucleic acid templates in the case of a jasmine plant showing yellow spots and leaf discoloration (Amoia 2022). The identification of jasmine virus C (Carlavirus) in an ornamental host largely used in gardening alerts for the potential virus spread and the need of testing for clean propagation material.

The potential of this new generic diagnostic technique, depicted in the few examples presented here from a recent wide literature, aims to a change of vision in molecular diagnostics. Massive sequencing in the next years can play a fundamental role in the *de novo* discovery of plant viruses through metagenomic, regardless their effective pathogenic action, that should be proved by biological interaction. Anyway, a pinch of 'old' phytopathological knowledge is still needed to give a round evaluation to the abundance of new virus data.

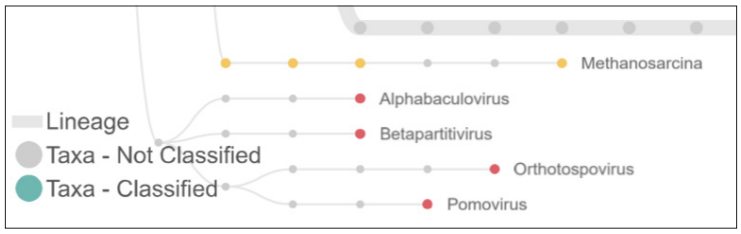

Figure 1 - An example of a WIMP virus section output from the nanopore sequencing analysis of a plant (*Jasminum*) whole transcriptome.

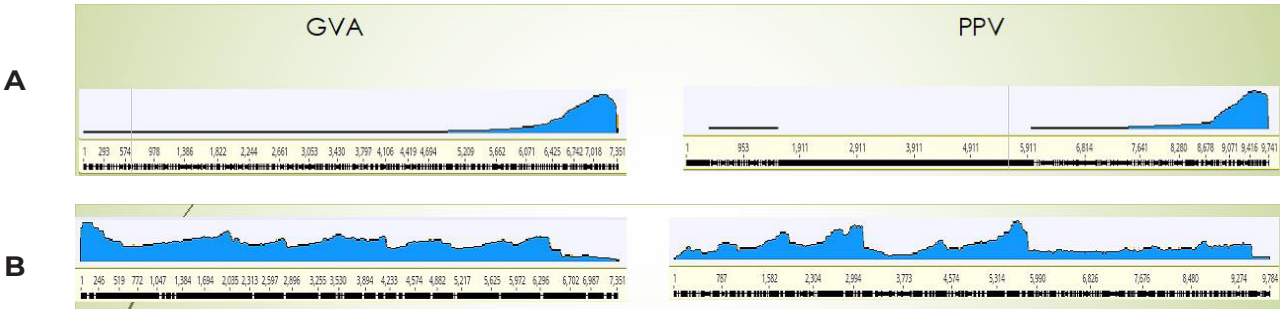

Figure 2 - Output sequencing from *Nicotiana benthamiana* infected by grapevine virus A and plum pox virus, assayed by direct 3'end RNA (A) or random-primed cDNA (B)

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INVASIVE, NEW PESTS AND BENEFICIALS

Egypt

Two new Eriophyes species (Acari: Eriophyidae) on Tamarisk trees from Egypt

Two new *Eriophyes* species are described and illustrated on tamarisk (athel) plants from Egypt. They are *Eriophyes aegyptitamarix* **sp. nov.**, collected from the base of leaves and twigs of *Tamarix senegalensis* DC. (Tamaricaceae) and caused rusting symptoms, and *Eriophyes gizaensis* **sp. nov.**, collected from rounded green galls on buds and twigs of *T. senegalensis*. The adult and immature stages of both species are described and illustrated. **[Elhalawany, A.S.; Ezz ElDein, Seham A. and Ibrahim, Noha, A. Systematic and applied acarology, 28 (5): 838–851, 2023].** https://doi.org/10.11158/saa.28.5.6

New species and records of gall mites of the genus *Aceria* (Eriophyoidea, Eriophyidae) associated with *Tamarix* in Egypt and South Africa

This paper reports on eriophyid mites of the genus *Aceria* Keifer (Eriophyoidea, Eriophyidae) associated with Tamarisk plants (*Tamarix* spp., Tamaricaceae) in Egypt and South Africa. Three new *Aceria* species are described: *A. aegyptytamaricis* n. sp. causing green galls on buds and twigs of *Tamarix senegalensis* DC. in Egypt, *A. noorspoortiensis* n. sp. causing bright pink galls on young shoots of *T. usneoides* E. Mey. ex Bunge in South Africa, and *A. benhaiensis* n. sp. living under scaly leaves and causing small green galls and deformation of twigs on *T. senegalensis* in Egypt and *T. usneoides* (in South Africa). Sequences of three genes, Cox1, D1D2 28S, and ITS1-5.8S-ITS2, were obtained for *A. noorspoortiensis* n. sp. and *A. benhaiensis* n. sp. Blastx search for Cox1 sequences of both new species against *Aceria* from GenBank (a) indicated the sequence AIT38252.1 of *Aceria* sp. from *Tamarix* sp. from India as the most similar with 87–90% identity and 55–56% coverage and (b) revealed one codon deletion about 500 bp in the 3' direction from the Cox1 start codon, which is the first documented case of a codon deletion in the middle part of this gene in Eriophyinae. Additionally, supplementary descriptions of three other *Aceria* spp. collected from tamarisks in Egypt are given. They are: *A. amrini* Joshi from big brown galls of *T. aphylla* (L.) H. Karst. (First record for Africa), *A. dioicae* (Keifer) from green galls on buds and twigs of *T. senegalensis*, and *A. tamaricis* (Trotter) from green galls on buds and twigs of *T. senegalensis* (first record for Africa). **[Situngu, Sivu[1]; Elhalawany, A.S.[2]; Nompumelelo P.Ngubane-Ndhlovu[1]; Chetverikov, P.E.[3] (Egypt), Acarologia 63(4): 1271-1303, 2023]** https: //doi.org/10.24349/n4ay-b8yb

Syria

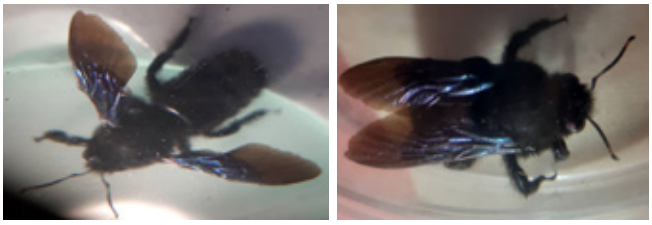
Parasitoid Wasps of Green Lacewing, *Chrysoperla carnea* in Cotton Fields in Hama Governorate, Syria: New Records and Some Biological Aspects

This study aimed to identify parasitoid species of *Chrysoperla carnea* stages and to evaluate their effect on predator's populations in the field. Three hymenopteran parasitoid species of this predator were collected and identified. *Telenomus acrobates* Giard (Hymenoptera: Scelionidae) was found to parasitize the eggs and was previously recorded in northern Syria. Two other species parasitized the larva-pupa stage of the predator and are recorded for the first time in Syria in this study. The first species is *Baryscapus chrysopae* (Crawford, 1915) (Hymenoptera: Eulophidae), which showed a

parasitism rate of 23.08% and 28.75% of the total collected eggs in the 2017 and 2018 seasons, respectively, and 2-14 parasitoids individuals (males and females) emerged from each pupa. The second species was *Perilampus chrysopae* (Crawford, 1914) (Hymenoptera, Perilampidae), which showed a parasitism rate of 5.13% and 23.81% of the total larvae collected in the two seasons, respectively, and one parasitoid individual (male or female) emerged from each pupa. **[Nabhan, M., Z.Sh. Khamis and B. Hawis (Syria), Arab Journal of Plant Protection, 41(3): 306-313, 2023].** https://doi.org/10.22268/AJPP-41.3.306313

First Record of The Violet Carpenter Bee *Xylocopa violacea* (Linnaeus, 1758) (Hymenoptera: Apidae)

The Violet Carpenter Bee - *Xylocopa violacea* is large in size of more than 2.5 cm, shiny bee with an iridescent blue/violet sheen to the wings. It is a member of the Apidae bee family. The name XYLOCOPA is derived from Greek and means (wood factor) where females make their nests in dead wood, where they dig holes and tunnels (which may contain branches) in spoiled wood and branches of trees in which nesting, then form the nest cells inside the tunnels of fragments rotted wood. The measurement of these sections is about 2 mm in the middle, but they are twice the thickness of the edge. It was found that the length of each cell is an individual upgrade range from 14 to 20 mm. The violet carpenter is one of the pollinators, where adult insects visit many plants such as Nasturtiums *Tropaeolum majus* L., Wisteria *Wisteria sinensis*, Lavender *Lavandula* spp., Sweetpea, *Lathyrus odoratus*‹, and others. **[Hoda Qawas, Abdulnabi Basheer, Zakaria Al-Naser (Syria), Department of Plant Protection, College of Agriculture, University of Damascus, Syria, 2023].**



First record of the mite *Epirrhoe galiata* (Lepidoptera: Geometridae) in Syria

The moth *Epirrhoe galiate (Denis & Schiffermüller, 1775), the galium carpet, is a moth of the family Geometridae; the length of the insect is 12-13 mm, and* the wingspan can reach about 28–32 mm. The forewing ground is pale grey, with a broad, darker bluish-grey central band. The forewings have also small dark grey or bluish-grey stains near the apex. The hindwings are pale whitish-grey and marked with fine crosslines. The larva is naked except for a few short bristles, brown with dark and light longitudinal stripes. The larvae feed on Galium species, including *Galium verum* and *Galium boreale*. These moths prefer lime and chalk downland, sunny woodland fringes, dry meadows, grassy heathlands, glades, forest clearings, moorlands, sea cliffs and xerophilous hillsides**. [Mohamad Kanouh, Abdulnabi Basheer (Syria), Department of Plant Protection, Faculty of Agriculture Damascus University, Syria, 2023].**

First record of the mealybug *Phenacoccus solenopsis* in Syria

Phenacoccus solenopsis Tinsley (Hemiptera: Pseudococcidae), is a species of mealybug in the family Pseudococcidae. Having originated in North America, it has spread to other parts of the world and become a major pest of cotton crops. The adult female is ellipsoidal, about 5 mm, and 3 mm wide, with a convex dorsal surface and a flat ventral surface. The body is yellowish-grey, but this is largely obscured by the waxy secretions that cover the body, although the segmentation can still be seen. There is a transverse, darker bar on the dorsal surface. There are 18 pairs of very short, lateral wax filaments and several slightly longer caudal filaments**. [Hoda Qawwas, Abdulnabi Basheer(Syria), Plant Protection, Faculty of Agriculture, University of Damascus, 2023].**

Mealybug *Phenacoccus solenopsis*

First record of the humpbacked fly *Megaselia scalaris* (Loew,1866) (Diptera:Phoridae) on fall armyworm, *Spodoptera frugiperda* (J. E Smith) (Lepidoptera: Noctuidae) in Syria,2022

The presence of the humpbacked fly *Megaselia scalaris* (Loew, 1866)(Diptera: Phoridae) on fall armyworm larvae, *Spodoptera frugiperda* (J. E Smith) (Lepidoptera: Noctuidae) was reported in maize fields in Kafr Zita, northern Hama governorate during a survey conducted at the end of August 2022. Larvae that seemed to have been parasitized were collected and reared on corn plant stems with leaves in Plexi Glass until fly adult emergence under laboratory conditions .Adults and pupae were identified at the Biological Control Studies and Research Center at the Faculty of Agriculture, Damascus University. The Parasitoid fly is a small, 2 mm long, yellowish-colored fly with a striated back. Humpbacked appearance. The puparium was dorsoventrally flattened and had a pair of long pupal respiratory horns. **[Shady Mohammad Soliman[1],Alaa Turkey Saleh[2] and Eyad Mohammad Mohammad[3]. [1] Biological Control department in Hama, [2] Biological control studies and Research Center, Faculty of Agriculture, Damascus University, [3]Directorate of Plant Protection, Ministry of Agriculture and Agrarian Reform, Syria.2022].**

First report of *Alternaria* spp. on *Acacia cyanophylla* Lendley. in the Syrian Coast

Acacia trees are considered one of the important forest trees on the Syrian coast due to the role they play in stabilizing sandy soils and using them for afforestation of poor Marne limestone soils, in addition to their importance as ornamental plants and their important environmental role is not absent, especially as they are evergreen. In recent years, symptoms of infection were observed in the form of spots on acacia (*Acacia cyanophylla* Lendley) leaves in the vicinity of Tishreen University in Lattakia. This research was carried

out in both laboratory and field from March 2021 until February 2022 to determine the causative factor for these spots in preparation for studies that have an interest in studying acacia diseases and other forest trees. After laboratory examination and artificial infection to investigate the causative agent of these symptoms, it has been found that the infection caused by *Alternaria* spp. to be the first report of this fungus on acacia on the Syrian coast. **[Afra' Mutee' Haider (Syria), Department of Plant Protection, Faculty of Agriculture engineering, Tishreen University, Lattakia, Syria, 2023].** afraaafraa485@gmail.com

The widespread of bindweed moth *Tyta luctuosa* (Denis & Schiffermüller) in Syria

Tyta luctuosa (Denis & Schiffermüller) (Noctuoidea: Lepidoptera) is found in Iraq, Afghanistan, Pakistan, northern India, Tunisia, Algeria, Morocco, southern Europe, Greece, and is not restricted to any particular habitat. *T.lctuosa* is one of the most widespread defoliators of bindweed *convolvulus arvensis* L., is active during most of the growing season of this weed, *T.lctuosa* has two generation per year. They are day-active but have also been attracted to light at night. Eggs are laid on the stem and flower buds of the host plant. The larvae are nocturnal feeders on the flowers and leaves. They are difficult to find because of their drab colour and secretive habits. Pupation occurs in the soil. This insect is used as a biological control agent of bindweed in the USA**. [Ziad Aleisa (Syria), Researcher in General Commission for Scientific Agricultural Research, cotton research administration, biocontrol lab, Aleppo, Syria, 2023].** ziadissa989@gmail.com.

First record of spindle leaf blight *Diplodia euonymi* in Syria

The spindle plant, *Euonymus japonicus*, is one of the most widespread ornamental plants in gardens in Syria, as it is evergreen, has shiny leathery leaves, and a dense foliage, which makes it moldable. It is native to Japan and the Korean Peninsula. Spindle is affected by many diseases that reduce its ornamental value. In the winter and spring of 2020, symptoms of leaf blight were observed on spindle bushes planted in the gardens of Masyaf City Hospital, the western countryside of Hama Governorate. Symptoms initially appeared on the apical leaves and then spread throughout the plant in the form of leaf blight. Initially, pale green spots appear which quickly become reddish-brown (chocolate). As the infection developed, the spots became white and their surroundings remained chocolate color. The pathogen forms its anamorph stage on the edges of the spots in the form of Pycnidia containing two-celled conidia, yellowish brown color, 22-30 x 10-15 micrometers. The teleomorph stage appears on all white spots in the form of black, spherical Ascocarps that form in very large numbers between the two epidermises of the leaf. In each Ascocarp there are several hyaline elongated asci 80-120 micrometers. In each ascus there are 8 elongated hyaline Ascospores consisting of one cell. (sometimes two cells) 20-32 x 7.5-10 micrometers .Based on the symptoms of the infection and on the morphological and biometric characteristics of the pathogen structures, it is clear that the fungus is *Diplodia euonymi*, a member of the Ascomycota, belonging to the class Dothideomycetes, the order Botryosphaeriales, the family Botryosphaeriaceae, and the genus Diplodia. **[Hassan Ahmad Khalil, Reem Naufal Youssef(Syria), Department of Plant Protection, Al-Baath University, Faculty of Agricultural Engineering, 2023].**

Tunisia

The cotton mealybug *Phenacoccus solenopsis* Tinsley (Hemiptera: Pseudococcidae) is spreading in North Africa: first report in Tunisia

Biological invasions by alien agricultural insect pests nowadays represent a major threat to the durability of agricultural. systems. In this study, we report for the first time the presence of an invasive economic pest of ornamental and solanaceous crops in Tunisia: the cotton mealybug, Phenacoccus solenopsis Tinsley (Hemiptera: Pseudococcidae). It is native to America and has been spreading in Asia and the Mediterranean Basin. It was found in autumn 2021, forming dense colonies on Lantana camara L. (Verbenaceae) used for ornamental purposes in urban parks in the governorate of Tunis and on tomato Lycopersicon esculentum Mill. (Solanaceae) protected crops in the governorate of Sousse. Phenacoccus solenopsis was identified using an integrative approach based on morphological features and molecular analysis. Phylogenetic analysis using the mitochondrial Cytochrome Oxidase I (mtCOI) sequences of P. solenopsis populations from native and invaded areas retrieved in GenBank showed that Tunisian specimens might derive from an Asian population. We found that Nephus quadrimaculatus Herbst (Coleoptera: Coccinellidae: Scymninae) is the only natural enemy associated with this newly introduced pest so far. This is the first report of P. solenopsis attacking Lantana and tomato plants in Tunisia, and it should be considered a potential threat to associated crops. **[Khaled Abbes, Ahlem Harbi, Takwa Wannassi and Michele Ricupero (Tunisia), Oriental Insects, 5 September 2023].** https://www.researchgate.net/profile/Takwa-Wannassi

RESEARCH HIGHLIGHTS

Algeria

Phytochemical Analysis and Allelopathic Effects of Quinoa *(Chenopodium quinoa* Willd.) Grain Extract.

This study aimed to determine the phytochemical composition of *Chenopodium quinoa* extracts and to show their allelopathic effects on the seed germination of some plants such as wheat (*Triticum durum* L.), rapeseed (*Brassica napus* L.) and sugar beet (*Beta vulgaris* L.). The results of the chemical screening revealed that quinoa grains contain flavonoids, alkaloids, tannins, reducing compounds, sterols and triterpenes, and they are rich in saponins. polyphenols and flavonoids were determined in both aqueous and methanolic extracts. The results of TLC chromatography showed the presence of flavonoids represented by flavonol and flavanols catechin, quercetin, flavanone or flavone and chalcone. HPLC analysis identified and determined the content of catechin, acacetin, tangeretin, caffeic acid and 2, 3,4,5,7 Penta hydroxy flavone in methanolic extracts.

Nevertheless, aqueous extracts of *Chenopodium quinoa* Willd. Inhibited germination of sugar beet seeds by 72% and stimulated root length and peduncle growth in wheat and rapeseed seeds. **[Kadri, M., N. Salhi and A. Chana (Algeria), Arab Journal of Plant Protection, 41(3): 246-257, 2023].** https://doi.org/10.22268/AJPP-41.3.246257

Algeria

Causal Agent of Date Palm Bayoud Disease in the Laboratory.

Fusarium disease of date palm caused by *Fusarium oxysporum* f. sp. *albedinis*, commonly known as Bayoud disease, is a serious threat to date palm cultivation in North African countries, including Algeria. The inhibitory activity of eucalyptus oil (*Eucalyptus globulus*) was evaluated in the Plant Biology Laboratory at the University of Constantine, Algeria. The results showed significant inhibition of fungal growth, which varied between 17 and 60% based on the used concentration. The pathogen inhibitory effect was mainly due to the presence of monoterpene compounds which have a strong inhibiting property against fungi.

The results suggest that Eucalyptus essential oil is potentially a safe and effective alternative to chemical fungicides. Still, field evaluation for its ability to control date palm Bayoud disease is essential before recommending its use in farmers' fields. **[Noueichi, A., S. Chibani, A. Othmani, M. Boukbach, W. Abdelaziz and R. Mouna (Algeria), Arab Journal of Plant Protection, 41(3): 281-284, 2023].** https://doi.org/10.22268/AJPP-41.3.281284

Algeria

Assessment of Thrips Diversity Associated with Two Olive Varieties (Chemlal & Sigoise), in Northeast Algeria.

In this study, the diversity of thrips (Insecta: Thysanoptera) on two varieties of olive trees (Chemlal and Sigoise) in northeast Algeria (Province of Batna), was evaluated for 3 years (2019–2021). In addition, the fluctuations in the numbers of phytophagous thrips were estimated according to the varieties phenological stages. A total of 19 species have been identified, and the olive thrips (*Liothrips oleae*) have just been reported for the first time in Algeria. Only 5 females of this species were collected in May 2021 on the Sigoise variety at the fruit-setting stage. *Haplothrips tritici* (17.25%), *Frankliniella occidentalis* (16.29%) and *Thrips tabaci* (16.29%) are the most present. It is noticed that the thrips were present on the olive tree only in spring (April to May), when the average monthly temperatures are between 10–26 °C, but linear regression analyses were not confirmed that temperature explains the variation in thrips numbers, which may be due to other climatic factors such as the rainfall, while olive varieties and phenological stages are affecting the population of thrips, their number was higher on the Sigoise variety, especially at flowering stage in the case of *H. tritici* and *F. occidentalis* while *T. tabaci* was most noticeable at the fruit growth stage. The number of this species was relatively low, just until the inflorescence stage, where thrips start to appear in Sigoise before Chemlal. **[Randa Mahmoudi[1],*, Malik Laamari[1] and Arturo Goldarazena[2] (Algeria), [1]LATPPAM Research Laboratory, Department of Agriculture, University of Batna 1, Batna 05000, Algeria.[2]National Museum of Natural Sciences, National Reference Laboratory for Nematodes and Arthropods, Department of Biodiversity and Evolutionary Ecology, Calle Serrano 115, 28006 Madrid, Spain. Horticulturae, 9 (1), 107, 2023].** https://doi.org/10.3390/horticulturae9010107

Algeria

Occurrence and Diversity of Barley Yellow Dwarf Virus in Algeria.

Cereals are prone to viral infections, and the economic impact of these has increased in recent years. Among these diseases, barley yellow dwarf (BYD) is one of the most destructive diseases of cereals today. For three consecutive years (2014–2015–2016) surveys were carried out in order to search for BYDV species (BYDV-PAV and -MAV) as well as other cereal viruses, wheat spindle streak mosaic virus (WSSMV), southern bean mosaic virus (SBMV) and barley stripe mosaic virus (BSMV) in seven regions of Algeria (Algiers, Boumerdes, Tipaza Médéa, Adrar, Khenchla and Batna). Targeted samples were taken randomly from plants of different cereal species (wheat, barley, oats). The samples were analyzed by DAS-ELISA and RT-PCR. The results of ELISA and PCR tests showed the presence of BYDV-PAV in barley, durum wheat, bread wheat and oats. Thus, this viral species was found in all the cereal regions surveyed (North, South, East and West). Seven samples (durum wheat, barley, and oats) were sequenced, and phylogenetic analyses were performed. They revealed that the Algerian sequences clustered in Group I and Group II. **[Souhila Boubetra, Bilal Yahiaoui, Arezki Lehad, Moussa Mokhtari, Rima Hind Boudchicha, Farida Mohammedi, Roza Assous and Meriem Louanchi,(Algeria),Acta Phytopathologica et Entomologica Hungarica, 2023].** DOI: 10.1556/038.2023.00172

Egypt

Field Evaluation of a Commercial Biopesticide in Comparison with a Conventional Insecticide against *Spodoptera littoralis* (Boisduval) and *Scrobipalpa ocellatella* (Boyd) Sugar Beet Insect Pests and their Effect on the Associated Predators.

In this study, the insecticidal activities of one commercially available biopesticide, Biotect of *B. thuringeinsis* var. kurstaki, (9.4% WP, 32000 I.U./mg), and the conventional insecticide, Andros 5.7% WDG (Emamectin benzoate), against *Spodoptera littoralis* (Boisd.) and *Scrobipalba ocellatella* (Boyd) larvae and three natural enemies; *Chrysoperla carnea* (Steph.), *Coccinella undecimpunctata* L. and *Scymnus interruptus* (Goeze) were evaluated during 2020 and 2021 seasons in sugar beet fields at Kafr El-Sheikh Governorate, Egypt. Andros was the most effective against *S. littoralis* and *S. ocellatella* populations with reduction of 83.3% and 91% in 2020 and 82.60% and 88.96% in 2021, respectively. Whereas, Biotect had the least effect with 67.2% and 60% reduction in 2020 and 70.12% and 56.4% reduction in 2021 for *S. littoralis* and *S. ocellatella,* respectively.

On the other hand, treatments had a mediocre effect on the predators during the two seasons. Andros showed the highest effect on *S. interruptus* larvae with a reduction of (91.0% and 98.5% reduction), on *C. undecimpunctata* (81.66% and 83.22% reduction) and *C. carnea* (78.12% and 86.19% reduction) in 2020 and 2021 growing seasons, respectively. Andros induced the highest decline in insect numbers. From this study, it can be proposed that Biotect is a promising *B. thuringeinsis* product for the biocontrol of cotton leaf worm and beet moth under field conditions. **[Abdelsalam A. Farag, Ahmed H. El Kenawy and Elsayed A. Refaei (Egypt), Arab Journal of Plant Protection, 41(3): 266-271, 2023].** https://doi.org/10.22268/AJPP-041.3.266271

Egypt

The Role of *Chrysoperla carnea* (Steph.) and *Beauveria bassina* for Controlling Cabbage Aphid, *Brevicoryne brassicae* L. on Cabbage Plants.

Field experiments were carried out at Kafr Saqr district, Sharkia governorate, during the 2019/2020 and 2020/2021 growing seasons to evaluate the predator: prey ratios for the release of *C. carnea* and evaluation of using *Beauveria bassiana* suspension against the cabbage aphid, *Brevicoryne brassicae*. The results obtained showed that the effective control of *B. brassicae* was achieved ten days after releasing the larvae of the predator *C. carnea* when the predator: prey ratios were 1:5 and 1:10. Meanwhile, at higher ratios (1:20, 1:25 and 1:50), the cabbage aphid *B. brassicae* numbers decreased 25 days after predator release. The numbers of *B. brassicae* decreased by 84.69 and 81.61% at 1:5 and 1:10 predator-prey ratio during the first season, respectively. On the other hand, the aphid numbers were reduced by 81.50 and 70.95% at 5 days after the predator's release during the second season for the two predator-prey ratios, respectively. Complete reduction of *B. brassicae* populations was achieved 15 days after the release of *C. carnea* larvae with predator ratios of 1:5, 1:10 and 1:15, and numbers of *B. brassicae* at these ratios depressed completely 20 days after release. The results revealed that the best control of *B. brassicae* populations under greenhouses conditions was achieved by using the lower predator-prey ratio of 1:5 and 1:10 ten days

after releasing larvae of *C. carnea*. The highest mortality rate in *B. brassicae* population caused by the fungus *B. bassiana* was 88.33%, recorded at 7 days after the application of spore concentration 1×10^7 spores/ml and the LC_{50} obtained in the field was 1.10×10^6 spores/ml. It can be concluded from this study that *C. Carnea* and *B. bassiana* are effective biocontrol agents in controlling the cabbage aphid *B. brassicae* in the field. **[A.A.A. Saleh[1], H. El-Naga[1], Amany A. Khalifa[1], Mohamed F.M. Zawrah (Egypt), Arab Journal of Plant Protection, 41(3): 321-326.** https://doi.org/10.22268/AJPP-041.3.321326

Egypt

Population fluctuation of some economically important mites on two mango cultivars in Qalyubia governorate, Egypt.

Population fluctuation of the most abundant mite species inhabiting mango, *Mangifera indica* L. (Anacardiaceae), as one of the important fruit trees at Qalyubia governorate, Egypt was studied from August 2020 to September 2022. Results indicated the occurrence of 19 mite species from 18 genera in 10 families. Mango bud mite, *Aceria mangiferae* Sayed, mango rust mite, *Metaculus mangiferae* (Attiah) and tetranychid mite, *Oligonychus mangiferus* (Rahman & Sapra) have become important pests on "Naomi" mango cultivar.

While, the mango leaf coating mite, *Aceria aegyptindicae* Elhalawany, Amrine & Ueckermann and *Cisaberoptus kenyae* Keifer are important pests on "Heidi" cultivar. *Aceria mangiferae* has two peaks (in mid and late November, and late May and early-June) on buds of "Naomi" cultivar during the two successive seasons. *Metaculus mangiferae* has two peaks on leaves (in mid- October and late May) in the first season and (in late November and May) in the second season. *Oligonychus mangiferus* was recorded in high numbers in spring and autumn on "Naomi" cultivar during the two collection seasons. *Aceria aegyptindicae* and *C. kenyae* have two peaks (in late November and mid-February) in the first season, and (in early December and late April) in the second season on "Heidi" cultivar. Predacious mites are following their associated phytophagous prey with a lag in time.

The population of phytophagous mites was significantly affected by combined weather factors and plant age than weather factors alone. Results indicated 'Heidi' is resistant to infestation with *A. mangiferae*, and susceptible to both *A. aegyptindicae* and *C. kenyae*. However, 'Naomi' is susceptible to the first pest and resistant to the latter two pests. The changes in the nutritional value of the host plant are more effective on mite population fluctuation than weather factors. **[Elhalawany, A.S.; AbdelKhalik, Asmaa R. and Ezz ElDein, Seham A.(Egypt), Persian Journal of Acarology, 12 (3):439–453, 2023].** https://doi.org/10.22073/pja.v12i3.78171

Iraq

The Effect of the Hight of the Pheromone Traps Type Delta in Trapping and Forecasting the Emergence of the Lesser Date Moth, *Batrachedra amydraula* Meyrick and Evaluating the Sensitivity of Some Palm Varieties to Insect Injury.

During the 2021-2022 season, a field study was conducted in Anbar governorate to determine the population dynamics of *Batrachedra amydraula* using pheromone traps (Alpha scenes Inc. West Linn) and the effect of trap height on number of male insects trapped. In addition, host preference and sensitivity of date palm varieties to infestation with the insect was also evaluated. The results showed that the insect's first appearance was at the end of the third week of March with an average of 2 insects/ trap at a temperature of 16.5°C and 51.5% RH. The number of insects caught in the trap reached a peak during the first week of June at an average of 139 insects/traps, at a temperature of 32°C and 42% RH.

The insect count then decreased after the third week of June to zero insects/trap until the third week of July. Field experiments also showed that the traps height affected the number of insects caught. The average number of total insects caught in traps at 1.5 m was 45.5, whereas the average number caught in traps at 2.5 m was 20.5. The results also showed that the highest total infestation rate in the Khistawi variety was 36.89%, followed by Zahdi (18.83%).

The infestation rate of the variety kheyara was the lowest (12.61%). The results also showed the average larval density of the insect *Batrachedra amydraula* was the highest on the khestawi variety with total average injury severity of 0.14%, followed by zahdi variety with an average total injury severity of 0.05%. Therefore, by combining the infestation rate and an average number of the insect larvae, it can be concluded that the Khistawi variety was the most sensitive to the insect, and the variety Kheyara was the most tolerant.

In addition, using pheromone traps was instrumental in reducing the injury caused by the insect, and using resistant/tolerant varieties can effectively contribute to the reduction of the infestation rate of the insect to become below the economic injury level. **[El-Filahy, M.H.A. and M.Sh. Mansour (Iraq), Arab Journal of Plant Protection, 41(3): 226-232, 2023].** https://doi.org/10.22268/AJPP-41.3.226232

Iraq

The Mutating Effect of Microwave Irradiation on Spores and Crystal Protein Formation of Iraqi *Bacillus thuringiensis* kurstaki KS3. *Bacillus thuringiensis* is the most important biological control agent that is used in fields and stores against insect pests of agricultural importance. This research was conducted to study the effect of microwave radiation on sporogenesis and crystal protein production by the Iraqi bacterium *B. thuringiensis* KS3 strain. The bacterium was enriched by Lauria bertani broth (LB) pH 7.0 for spore formation. Spore suspension was microwave irradiated at 1000 watts for 5, 10 and 15 seconds. The spore inactivation rate for each period of microwave treatment was calculated, and the macroscopic differences were examined. Crystal protein and spore production were estimated for irradiated and non-irradiated bacterial cultures. Viable spores in the control treatment was 3×10^8

viable spores/ml, and decreased after 5, 10, and 15 s of microwave treatment to 3×10^7, 2×10^6 and 2×10^4 viable spores/ml, respectively.

The reduction of spore viability reached to 49.263% 15 seconds after treatment. The appearance of colonies on the top of nutrient agar (NA) was almost similar to that of the control, with no differences in colour, margin, or surface of treated colonies following the three time periods of treatment. Colonies with dense colour, smaller in size and with straight margins appeared on Congo red culture for all treatments in contrast to the control.

Microscopic examination showed that treated bacilli were similar in shape, diameter, and arrangement; however, smaller bacterial cell sizes following 15 s irradiation treatment were observed. Control culture after 72 h started to form spores, whereas after 24 h, irradiated spores for 5, 10 and 15 s formed 75, 90 and 90% viable spores, respectively. Crystal protein reached the highest concentration after 72 h in the control culture, whereas it varied based on the treatment period.

The production of viable spores from microwave-irradiated isolates increased by about one logarithmic cycle compared with the control culture of *B. thuringiensis* KS3.The peak of the UV spectrum of Crystal protein extracts was recognized at 255-280 nm and the peak of the curve indicated the protein concentration at a given wavelength. Differences were recognized in the UV light wavelength range of 220-235 nm. **[Khlood Abedalelah Alkhafaji, Falah Hanash Nahar, Samira Auda Khlaywi, Mohammed Abedalrahem Abedallah, Ahmed Jaafar Feaath, Ameera Alwan Mezban and Sabreen Abedalhadi Saleh (Iraq), Arab Journal of Plant Protection, 41(3): 285-291,2023].** https://doi.org/10.22268/AJPP-041.3.285291

Iraq

Some Morphological Variation of Dwarf Honeybee, *Apis florea* Fab. in Northern and Southern Iraq.

The dwarf honeybee, *Apis florea* Fab. is a successful ecologically adaptive and important factor in pollinating crops. It has recently spread widely in Iraq. Samples of worker bees from different regions of Iraq (North, Kurdistan Region and Southern, Basra province) were collected during the period from March to December 2021 to investigate the variability of this bee species. Ten body morphological traits of worker bees and nine wing traits were selected for this study.

The statistical analysis of the results obtained showed a clear discrepancy in the measurement of the studied characters, as sizes were less in the southern bees compared to northern bees for head length, antenna length, femur length, tibia length, 3rd sternite length, 4th tergite length, front wing width and length, angle A4, angle B4, angle D7, angle G18 and angle K19. This is the first record of dwarf honeybee in Kurdistan province in Iraq.

[Alebty, M.A., I.M. Farag and K.O. Ali. (Iraq), Arab Journal of Plant Protection, 41(3): 332-338, 2023] https://doi.org/10.22268/AJPP-41.3.332338

Iraq

Occurrences of wheat curl mite *Aceria tosichella* Keifer 1969 (Eriophyidae) and the associated viruses (WSMV, HPWMoV, TriMV) in Iraq.

This study aimed to investigate the significant wheat yield losses in northern and central Iraq. The cause of these losses was examining the presence of wheat curl mite *Aceria tosichella* and three viruses vectored by this species – *Wheat streak mosaic virus* (WSMV), *High Plains wheat mosaic virus* (HPWMoV), and *Triticum mosaic virus* (TriMV). Mite specimens were collected from Erbil, Mosul, and Baghdad over three years (2020-2022) and identified using morphological characterization and DNA sequencing of the ITS region. Virus presence was determined using a Double Antibody Sandwich-Enzyme-Linked Immunosorbent Assay (DAS-ELISA). Mites were identified conclusively as *A. tosichella*, providing the first record of this species in Iraq. All three viruses were found to be present, with WSMV having the largest presence as it was detected in 99.56%, then HPWMoV (79.5%) of mite colonies. This is the first record of HPWMoV anywhere in Eurasia besides Ukraine and its widespread presence in Iraq in all three sampled provinces. TriMV was detected only in Erbil. To date, this virus has been recorded only in North America, and its presence is limited in Iraq. The confirmed presence of *A. tosichella* and three vectored-viruses in Iraq are all new records and critical information for reducing wheat yield losses in this country. **[L. K. Khalaf[1] (Iraq), M. Adhab[1], L. M. Aguirre-Rojas[2], A. E. Timm[3], [1]Dept. Plant Prot., Coll. of Agric. Engin. Sci., University of Baghdad. [2]Dept. Bot. Plant Sci., University of California Riverside.[3]Dept. Agric. Biol., Colorado State University, Fort Collins, CO, United States. Iraqi Journal of Agricultural Sciences, 54(3):738-748, 2023].** (luaay.k@coagri.uobaghdad.edu.iq), DOI: https://doi.org/10.36103/ijas.v54i3.1767

Lebanon

Evaluation of the critical parameters for taking decision to control *Bactrocera oleae*, in Olive Orchards in the South Region of Lebanon. Modern agriculture requires technology to give precise measures of relevant parameters, such as those associated with pest control. Here, we developed an algorithm model as the basis for a bait spray intervention by monitoring the olive fruit fly *Bactrocera oleae* (Rossi) with conventional traps covering 24.3 hectares of non-irrigated Baladi olive cultivars in the Hasbaya region. We installed 49 yellow sticky traps with ammonium bicarbonate. The adults, both males and females, were monitored on a weekly basis. The traps and trees were georeferenced, and parameters such as temperature, relative humidity, tree phenology (BBCH), and fruit load rate were compiled. The results show that the infested fruits were correlated equally with the fruit load rate and the number of adults captured, which in turn were correlated more with the temperature than the relative humidity. The number of males captured was higher than that of females throughout the cultivation period. The first symptoms of the fruits were observed on 22 September, when the BBCH was equal to 85, with an average number of adult captures of less than five when using traps over 7 days. **[Linda Kfoury[1], Michel Afram[2], Ali Chehade[2], Elia Choueiri[2], Amira Youssef[2], Samer El Romeh [3], Ihab Joumaa[2], Ghazi Arafat[3], Ahmad Elbitar[2]. [1]Faculty of Agricultural Sciences, Lebanese University, Beirut P.O. Box 14/6573, Lebanon.[2]Lebanese Agricultural Research Institute, Tal Amara, Zahlé P.O. Box 287, Lebanon. [3]Private Sector, Baalbeck P.O. Box 12/10961, Lebanon. Appl. Sci. 2023, 13, 12326].** https://doi.org/10.3390/app132212326

Lebanon

Comparative effect of six kinds of traps on *Bactrocera oleae* and the beneficial insects.

Within the framework of FruitFlyNet-ii project "Commercialization of an Automated Monitoring and Control System against the Olive and Med Fruit Flies of the Mediterranean Region", a study was carried out to compare the effect of different Traps on the olive fruit fly (OFF) captures and the beneficial insects, between 29 August and 10 October 2022, in 6.250 Ha of non-irrigated Olive Groves - in Hassbaya in South Lebanon. McPhail with Diammonium Phosphate 4%, Yellow and Green Panels, White and Yellow Delta Trap with Yellow or White Panels with Ammonium Bicarbonate (10g.), were installed under Latin square Design at a 50m distance, with permutation weekly.

Results showed that the green trap was not attractive at all and the yellow sticky Trap was the most attractive for the Olive Fruit Fly (OFF) and for the majority of the beneficial insects. Only one of the OFF parasitoids was observed, *Eupelmus urozonus* (Eupelmidae), from 5 till 19 September, and represented 7% of all parasitoids caught. Many other Parasitoïds were captured belonging to Pteromalidae (10%), Encyrtidae (12%), Ichneumonidae (4%) and Braconidae (66%) families. Predators such as *Chrysopa* sp., *Leuchocrysa americana* (Chrysopidae 28% of the total Predators), *Auplopus* sp. (Pompilidae 58%), *Eupeodes americanus* and *E. corollae*, *Chrysotoxum cautum*, *Toxomerus occidentalis* (Syrphidae 5%) and species belonging to Coccinellidae family (10%) were also caught. Many Pollinators, Honey bees (Apididae 21% of the total Pollinators), *Hylaeus* sp. (Colletidae 46%), *Halictus* sp. (Halictidae 16%), *Megachile* sp. (Megachilidae 9%), and *Andrena labiata* (Andrenidae 7%) were also captured.

[Linda Kfoury[1], Michel Afram[2], Haidar shkair[1], Ali Chehadé[2], Elia Choueiri[2], Ihab Joumaa[2], Amira Youssef[2], Ghazi Arafat[3], Samer El Romeh[3], Khouloud Ghraizi[2], Ahmad Elbitar[2], [1]Faculty of Agricultural Sciences, Lebanese University, Beirut P.O. Box 14/6573, Lebanon. [2]Lebanese Agricultural Research Institute, Tal Amara, Zahlé P.O. Box 287, Lebanon. [3]Private Sector, Baalbeck P.O. Box 12/10961, Lebanon. In XII European Congress of Entomology (ECE) held in Heraklion, Crete, Greece, 16-20 October 2023].

Lebanon

Distribution of the olive fruit fly of, *Bactrocera oleae*.

Within the framework of FruitFlyNet-ii project "Commercialization of an Automated Monitoring and Control System against the Olive and Med Fruit Flies of the Mediterranean Region", a study was carried out to evaluate the Distribution of the Olive Fruit Fly (OFF), on yellow sticky traps. This experiment followed From 22 August to 21 November 2022, in 2Ha (142m×142m) of non-irrigated Olives groves Cultivar, in Hassbaya in South Lebanon, on Yellow sticky traps with or without ammonium bicarbonate (8 with salt, T^+, and 37 without salt, T), installed at a distance of 20m between traps without salt (T), and 30m between T^+, and T. The observations were made weekly for the Adult Captures and biweekly for the rate of the fruit infestation, RFI (25 fruits/tree-Trap), in relation to the fruit phenological stage (BBCH), and the climatic data. Results showed that from 15 September, the fruits turned to the purple colour (BBCH:

80-81%) and became 90% from 10 October, the beginning of the fruit harvesting. The total number of the adults was inversely proportional to the temperatures. T^+ were more attractive for the fly adults than the T Traps. The mean Adults captured were on 21 November, 12.9 and 100 by Trap, respectively. Male density was higher than that of female at the beginning. Thereafter, Females increased progressively to reach equal densities on 31 October. The RFI was in the T^+ zones Trap less than that registered in T zones Trap: 0 to 0.5% and 0.3 to 5.3%, respectively. **[Ahmad Elbitar, Michel Afram, Ali Chehadé, Elia Choueiri, Ihab Joumaa, Amira Youssef, Ghazi Arafat, Samer El Romeh, Khouloud Ghraizi, Linda Kfoury (Lebanon), In XII European Congress of Entomology (ECE) held in Heraklion, Crete, Greece, 16-20 October 2023].**

Lebanon

In vitro propagation and microtuberization of potato (*Solanum tuberosum* L.) Spunta variety in Lebanon.

One of the factors that causes low potato productivity in Lebanon is the limited availability of certified seeds. The aim of this study was to establish a rapid protocol for *in vitro* propagation and microtuberization of potato (*Solanum tuberosum* L.) of Spunta variety. Meristems culture associated to thermotherapy (one month/37°C) constituted the first step. The highest percentage of reactive meristem (92%) was observed on MS medium devoid of growth regulators while MS medium containing Kin 0.4 $mg.l^{-1}$, GA3 0.5 $mg.l^{-1}$ and IBA 0.5 $mg.l^{-1}$ yielded the highest average number of shootlets (7.8) in the seventh subculture. The lowest number of days obtained for microtuber formation was 10 and the highest average number of microtuber (1.49) was obtained with shootlets incubated under C2 culture conditions (16-h day/8-h night for initial 7 days at 25±2°C; for the remaining period: continuous dark at 17±2°C). Contrary, the highest microtubers average length (10.75 mm), average width (7.41 mm) and average weight (646.26 mg) were produced under C1 culture conditions (16-h day/8-h night at 25±2°C). Medium supplemented with 5 $mg.l^{-1}$ BAP and 6% sucrose presented the highest average number of microtubers of 2.36 and 1.94, respectively. The type and concentration of cytokines and sucrose concentration did not have significant effect on the average length, width and weight of microtubers produced. **[M. Dalleh , J. Borjac, G. Younes, E. Choueiri, A. Chehade, A. Elbitar (Lebanon), Advances in Horticultural Science, 37(3): 243-253, 2023].** DOI: 10.36253/ahsc-13895

Lebanon

Biocontrol of *Tuta absoluta* for sustainable tomatoes production in Lebanon.

Since 2010, Lebanese tomatoes production has been threatened by the tomato leaf miner, *Tuta absoluta* (Meyrick) (Lepidoptera: Gelechiidae). In this context, this study aimed to evaluate the effect of six safe biological treatments (*Bacillus thuringiensis*, orange essential oil, pepper & garlic extract, pepper extract, garlic extract, and olive soap) in the management of *Tuta absoluta* on Lebanese tomatoes in organic open field conditions. Plants were treated after the first mines of this pest had appeared on leaves. We then compared the significant ability of six treatments to reduce infestation on leaves and weight loss of tomato fruits in comparison with the untreated control.

The results revealed that *Bacillus thuringiensis* treatment presented the lowest impact on tomato leaf infestation reduction and was the most effective treatment in protecting the tomato plants, with the least reduction in weight loss of tomato fruits. The orange essential oil resulted as the second most effective treatment, followed by pepper and garlic extract mixed with organic olive oil soap, pepper extract mixed with organic olive oil soap, garlic extract mixed with organic olive oil soap, and organic olive oil soap. Therefore, the first two treatments are relatively effective and economically viable to organically control *Tuta absoluta*. **[Michel Frem[1], Rita Sfeir[2], Elia Choueiri[3] and Vincenzo Verrastro[2] (Lebanon), [1]Qleiat station, Lebanese Agricultural Research Institute, Zone El Roumieh, Qleiat, Keserwan, Lebanon. [2]Mediterranean Agronomic Institute, CIHEAM Bari, 70010 Valenzano, Bari, Italy. [3]Department of Plant Protection, Lebanese Agricultural Research Institute, Tal Amara, P.O. Box 287, Zahlé, Lebanon, 2023].** DOI:10.24966/AAS-8292/100048

Libya

The Mortality Effects of Some Plant Powders on the Cowpea Beetle, *Callosobruchus maculatus* Fab. (Coleoptera: Chrysomelidae).

This study aimed to test the biological effect of four plant powders: black pepper (*Piper nigrum*), ginger (*Zingiber offiicinale*), retem (*Retama raetam*) and rosemary (*Rosmarinus officinalis*) against cowpea weevil, *Callosobruchus maculates* Fab. in chickpeas using five concentrations, 0.0, 1.0, 2.0, 3.0 and 4.0% (w/w). Results showed that all tested plant powders produced significantly higher mortality than the control and reached 80.63% in 96 h. Mortality rates increased proportionally with the duration of exposure. The black pepper *P. nigrum* caused the highest beetle mortality at all exposure times, which differed significantly from mortalities caused by the other plant powders used in this experiment. **[Nagat Ali Abuelnnor (Libya), Arab Journal of Plant Protection, 41(3): 327-331, 2023].** https://doi.org/10.22268/AJPP-41.3.327331

Syria

Some Biological and Ecological Factors of Olive Moth, *Prays oleae* (Bern.) in Al-Quneitra Governorate, Southern Syria.

This study was carried out during the 2017 and 2018 seasons in three locations in Al-Quneitra governorate (Saida, Khan Arnabeh, and Hadar), with different heights above sea level, in order to monitor the activity of adult males of the olive moth *Prays oleae* (Bern.) (Lepidoptera: Yponomeutidae). Using pheromone traps. The results showed that the olive moth has three generations per year, and the timing of adult males emergence and the duration of each generation differed according to the studied location and season.

Adults of the first generation (Anthophagous) began to appear from the first and second week of March for the seasons 2017 and 2018, respectively, in Saida site and were delayed until the first and second week of April in Hadar location for the two study seasons, respectively. The duration of the first-generation range was 11-12 weeks,

and the butterflies of the second generation (Carpophagous) appeared in the first week of June in the Saida location and the last week of June in Hadar location, and the duration of the generation range was 12-21 weeks. Adults of the third generation (Phyllophagous) began to appear in the second and third week of November for the Saida location in the two study seasons and the fourth week of September for the locations of Khan Arnabeh and Hadar, with a generation duration of 8-11 weeks.

The monthly abundance differed during the same season according to the study location, and the population peak of adult olive moths was in Saida location during the two seasons of the study in April (635.67 and 664.33 males/trap, respectively), which significantly outperformed the rest of the months. The two locations of Khan Arnabeh and Hadar had the highest number of adults during the two study seasons in May, with a significant difference compared with the rest of the months, with an average of 514.33 and 316.00 males/trap for the 2017 season, respectively, and 651.67 and 411.67 males/trap, respectively, for the 2018 season.

By studying the correlation between the population density of adult males and temperature and humidity, it was found that there was a positive correlation with temperatures during the first generation (+0.63), and a weak negative correlation during the second generation (-0.21), and a weak positive correlation during the third generation (+ 0.165).

Whereas the correlation was weakly negative between mean relative humidity and moth adults population in all three generations (-0.359, -0.39, -0.264), respectively. **[Al-Jouri, E., N. Diab and M. Dawoud (Syria), Arab Journal of Plant Protection, 41(3): 233-245, 2023].** https://doi.org/10.22268/AJPP-41.3.233245

Syria

Preliminary Study of Insect Pests on *Carthamus tinctorius* L. and their Associated Natural Enemies along the Syrian Coast.

The study was conducted on safflower fields at both Al-Sanoubar (Latakia) and Jamasa (Tartous) Research Stations during 2018, 2019 and 2020 seasons. It aimed to identify insect pests and associated natural enemies on the safflower. Results obtained identified 28 insect pest species feeding on different parts of safflower, ten species of sucking insects (*Uroleucon* sp., *Brachycaudus* sp., *Mzyus persica, Aphis fabae, Lygus* sp., *Oxycarenus* sp., *Dionconotus neglectus, Carpocoris mediterraneus, Eurydema ornata* and *Thrips tabaci*), eight lepidopteran species, six species of beetles and four dipteran species (one species of Agromyzidae and three species of Tephritidae).

The incidence of fruit flies at Al-Sanoubar station was 49% in 2019. Seven species of predator insects were identified: *Coccinella septempunctata*, *Cheilomenes* sp., *Hippodamia variegate*, *Scymnus syriacus*, *Orius* sp., *Chrysoperla carnea* and *Syrphus* sp.

Three hymenoptera species of parasitoids *Bracon* spp. and *Apanteles* sp were also recorded. **[Arab, A., A. Y. Ali, M. Zeity, M. Saleh, O. Salman, L. El-Dahhak, R. Darwish and J. Ammar (Syria), Arab Journal of Plant Protection, 41(3): 258-265, 2023].** https://doi.org/10.22268/AJPP-41.3.258265

Syria

The Efficacy of Silica Nano-Particles on the Inhibition of Oviposition of Tomato Borer, *Tuta absoluta*.

A laboratory experiment was conducted to examine the efficacy of silica nano-particles (SNPs) at 500 and 1000 ppm concentrations on oviposition of *Tuta absoluta*. One-month-old tomato plants in pots were used and randomly placed in wooden cages (4 pots/cage).

Five pairs of adult insects (males and females) were released in each cage. The number of eggs laid by females was recorded four days after insect release. Results showed that SNPs had an inhibitory effect on egg laying by *Tuta absoluta,* at all tested concentrations. SNPs treatment caused a decrease in eggs number by 71.17, 59.45 and 51.35%, respectively, at 1000, 750 and 500 ppm concentrations, compared with the control.

It can be concluded that nano-silica can be used as an insecticide to control *Tuta absoluta.* **[Ritta A.L. Hayek, Samir Tabbache, Ahmad Ibrahim Kara Ali and Mohammad Ahmad (Syria), Arab Journal of Plant Protection, 41(3): 278-280, 2023].** https://doi.org/10.22268/AJPP-41.3.278280

Syria

A Taxonomic Study of Some Species of Hyperparasitoids Attacking the Primary Parasitoid *Microterys nietneri* of the Citricola Scale Insect, *Coccus pseudomagnoliarum* in Syria.

The citricola scale insect, *Coccus pseudomagnoliarum*, (Kuwana) (Hemiptera: Coccomorpha: Coccidae) is an economically important pest on citrus trees along the Syrian coast.

The samples of host insects and infested plant parts were collected from April to June during 2016 and 2017 from two locations (Al-Sanobar, Dabba) in Lattakia Province and brought to the Biological Control Studies and Research Center (BCSRC), Faculty of Agriculture, Damascus University.

Based on the information gathered, *Microterys nietneri* (Motschulsky) (Hymenoptera: Encyrtidae) may play an important role as a biological control agent of citricola scale insects. Still, high hyperparasitoids levels reduced *M. nietneri* efficiency as a citricola scale parasitoid. The objective of this study was to describe and identify naturally occurring hyperparasitoids.

The following parasitoids were identified and reported for the first time in Syria: *Cheiloneurus claviger* (Thomson), *Pachyneuron muscarum* (Linnaeus), and *Marietta leopardine* (Motschulsky). Microscopic images were provided to illustrate these species' morphological and morphometric characteristics. **[Saleh, A.T. and A.M. Basheer (Syria), Arab Journal of Plant Protection, 41(3): 292-305, 2023].** https://doi.org/10.22268/AJPP-41.3.292305

Syria

Pathogenicity of the Fungus *Beauveria bassiana* and *Cladosporium* sp. on Different Life Stages of the Two Spotted Spider Mite, *Tetranychus urticae* Koch Under Laboratory Conditions. This study was carried out in the entomology laboratory of the Agricultural Scientific Research Center in Lattakia, Syria, to evaluate and compare the effect of local isolates of the entomopathogenic fungus *Beauveria bassiana* and two isolates of the fungus *Cladosporium* spp. on different life stages of the two-spotted spider mite *Tetranychus urticae* during October 2021.Conidial suspension for each fungal isolate were applied at a concentration of 1×10^7 conidia/ml, on the different stages of mites (adults, nymphs, eggs), using the direct spraying method. The effects of each isolate were significantly different between stages. The results showed that the most affected stage was the adult stage, with a death rate of 100% when treated with *B. bassiana* isolate, whereas it reached 72.5 and 58.5% when the two isolates of Cladosporium sp. were used. The egg stage was less sensitive to infection with fungi, where the death rate reached 59% for one of the two isolates of *Cladosporium* sp., 45.13% for the second isolate, and 38.25% for the *B. bassiana* isolate. The half-lethal time (LT50) was 3.82 days for the *B. bassiana* isolate in the adult stage. In contrast, isolate 2 of *Cladosporium* spp. was more effective in the nymph and egg stages, with LT50 reaching 7.77 and 8.68 days, respectively. **[Shaabow, A. and A. Haj Hassan (Syria), Arab Journal of Plant Protection, 41(3): 314-320, 2023].** https://doi.org/10.22268/AJPP-41.3.314320

Syria

Evaluation of the Efficacy of some Pesticides and Plant Extracts for Controlling of Fig Gall Psyllid Insect, *Pauropsyll Abuxtoni* (Laing, 1924) (Triozidae. The investigation was carried out during 2021 at the laboratories of Plant Protection Dept., Faculty of Agriculture, Damascus University and Abu Jarash fileds. Three pesticides (Chlorpyrifos, Dimethoate (Organophosphorous) and Acetamiprid (Neonicotinoid)). The ethanol extracts of *Eucalyptus camaldulensis* Dehn, *Inula viscosa* L. and Mill. *Lavandula angustifolia* leaves, and mixture of pesticides and extracts were evaluated against the Immature of fig gall psyllid (*Pauropsyll abuxtoni* (Triozidae)) insect on *ficus carica* L. tree in filed. The results showed that Acetamiprid+ *L. angustifolia* and Dimethoate+ *L. angustifolia* showed significantly superior effects on Immature. of P. abuxtoni, compared with other treatments in filed tests. However, Acetamiprid followed by Dimethoate alone and *L. angustifolia* showed the highest effect percentage compared with the other treatments in filed testes. Whereas the corrected mortality percentage was, 92.65, 89.19, 73.12 and 69.25%, at 7th day of second treatment in filed, respectively. While, Chlorpyrifos gave the modality percentage of efficacy on the Immature. of *P. abuxtoni* in the field, were the percentage 35.69% at 7days after the second spray. In the contrast, ethanol extract of *E. camaldulensis* gave the lowest percentage (24.19%) of efficacy on the Immature. of *P. abuxtoni* in the field,in the field tests compared with Other insecticides. Also, the results showed that, the efficacy percentage increases gradually as the exposure period increases. Therefore, the ethanol extract of *L. angustifolia* and *Inula viscose* and mixture thyme with insecticides can be used in integrated management of *P. abuxtoni* as an environmental friendly insecticide. **[Zakaria Al- Naser and Mohamad Kanouh (Syria), Department of Plant Protraction, Faculty of Agriculture, Damascus University, Damascus, Syria. Syrian Journal of Agricultural Research – SJAR 10(5): 377-388 October 2023].** https://agri-research-journal.net/sjar/?p=8510

Plant Protection News in the Arab and Near East Countries

Graduate Students Thesis (M.Sc. & Ph.D.)

Growing spirulina platensis locally and producing it as a biological preparation to induce potato resistance against PV.

This study was conducted during the agricultural season 2021-2022 in Al-Alam district: Salah Al-Din Governorate and the laboratories of the Plant Protection Department / Tikrit University to produce Spirulina Platensis locally in the form of a liquid biological preparation and use it in the axes of integrated management of Potyvirus Potato Virus Y and comparing it with commercial algae preparations.

The infection was diagnosed through the phenotypic symptoms on the potato plant, as the symptoms appeared on the affected plants in the form of mottling, mottled, yellowing and blackish-brown necrosis with the appearance of brown burns on the edges of the leaves, passing through the leaf support to the stem, with the leaves drying completely and dying and remaining hanging on the stem of the plant with the gathering of leaves Densely, forming symptoms of flushing.

The study also aimed to diagnose the complete genome of the PVY virus using the New Generation Sequence (NGS) technology, which was considered the first study in Iraq and the region The diagnosis was carried out on the potato plant, and it was registered in the NCBI Genome Bank under the entry number (OP547866), As well as detecting internal viruses associated with the primary virus above. **[Maadh Abdulwahab Alfahad and Ali Kadhem AL-Dulami (Iraq), Tikrit University, Agriculture College, Plant Protection Department (Master, 2023)].**

A study on Tomato Fusarium Wilt in Protected Cultivation and Efficiency of its Inhibition by Antagonist Bacteria

Twenty-four isolates of the pathogenic fungus *Fusarium,* were collected and purified from wilted tomato plants (*Solanum lycopersicum* L.) in Tartous and Lattakia governorates. They were classified according to morphological, cultural and microscopic characteristics. Their pathogenicity and virulence were evaluated towards the susceptible tomato cultivar “Samartetra”. The isolation results indicated that the causal agents of tomato wilt in protected agriculture in the study area are *Fusarium oxysporum* and *Fusarium solani*. The most virulent isolate of each species was selected for pathogenicity testing against 21 locally grown tomato cultivars and hybrids, in addition to eight grafting rootstocks of *Solanum lycopersicum* L..

The cultivars varied in their susceptibility to infection, with the tested isolates under artificial infection, with significant differences observed in susceptibility among tomato genotypes to Fusarium wilt.

The ability of local bacterial isolates from the rhizosphere of healthy tomato plants and *Trifolium purpureum* was tested to inhibit Fusarium wilt. Two bacterial species, *Pseudomonas fluorescens* and *Bacillus cereus*, exhibited high efficiency in inhibiting wilt caused by both *Fusarium solani* and *Fusarium oxysporum, in vitro* and *in planta*, and increased the growth parameters of the treated plants.

The most effective isolate in inhibiting the disease was *Bacillus cereus*, isolated from the root nodules of *Trifolium purpureum* (disease severity of 3.33% and 43.8% inhibition rate

for *F. solani* and disease severity of 6.67% and 25.3% inhibition rate for *F. oxysporum*). Local bacterial isolates showed better efficacy in disease control, compared to commercial biological pesticides, such as NOVOTREAT (based on *Bacillus amyloliquefaciens* FD777), the biological pesticide Bio WP TH (based on the fungus *Trichoderma harzianum,* produced by the Syrian Ministry of Agriculture), and the biological fertilizer Myco-Rise (based on the *vesicular arbuscular mycorrhiza* fungus VAM, *Glomus* sp.).

As well as the chemical pesticide Beltanol, (8-Hydroxiquinoleine Sulphate 50%). Among the commercial pesticides studied, NOVOTREAT was the most effective in controlling *F. oxysporum in planta* (disease severity of 6.67%), with no significant difference between the treatment with Myco-Rise and the chemical pesticide Beltanol and NOVOTREAT in controlling *F. solani in planta* (disease severity of 16.67%).

These results can be beneficial in developing a biological control program for Fusarium wilt in tomatoes. **[Reem Aboud Alkhlif[1*], Mohammad Fawaz Azmeh[2], Mahmoud abu Ghoura[2] (Syria),[1]Master student, Damascus University, Faculty of Agriculture, Plant Protection Department, Agriculture Engineer in Laboratory of Biodiversity, Syrian National Commission for Biotechnology, [2]Professor, Damascus University, Faculty of Agriculture, Plant Protection department (Master, 2023)].** reem.alkhlif@damascusuniversity.edu.sy

Phenotypic and genotypic diversity of *Phytophthora infestans* (Mont.) de Bary in different bioclimatic stages of Algeria and evaluation of the resistance of some potato varieties

Potatoes are an essential crop in Algeria, with an area 149 000 ha and a total production of 4.6 million tonnes in 2020. Each year, potato late blight caused by the oomycete *P. infestans* is responsible for significant damage that leads to important production losses, thus directly threatening food security in Algeria. Accurate knowledge of the structure and population dynamics of the pathogen is a prerequisite for the development of sustainable disease control strategies. A total of 131 isolates of *P. infestans* and 92 DNA fingerprints on FTA cards were obtained in the season and the late-season crops across the three major potato-producing regions.

The isolates were analyzed for phenotypic and genotypic characteristics and genetic structures. Genotypic diversity was analyzed with 17 microsatellite loci. The two mating types A1 and A2 were often found in the same field. This raises the possibility of oospores formation and their long-term survival. Differences in the proportion of mating types were observed between regions and crop types. The metalaxyl resistant phenotype of *P. infestans* isolates prevailed over the susceptible one. All isolates belonging to the three clonal lineages EU_13_A2, EU_2_A1 and EU_23_A1 showed rapid growth at 20°C. Variability in aggressiveness was noted between isolates of these clonal lineages on the two cultivars tested (Désirée and Spunta).

SSR markers revealed the prevalence of the clonal lineage EU_13_A2 (70%) compared to the other two clonal lineages. The unknown multilocus lineages are probably the result of sexual reproduction.

Lineage EU_23_A1 was found mainly in late-season crops. The genetic structure did not reveal a difference in the distribution of the three clonal lineages in the sampled regions. These data provide new information on the composition and temporal evolution of *P. infestans* populations in Algeria and lead off for a better understanding of the local epidemiology of this pathogen. Two experimental protocols were carried out to test

the resistance of 13 potato cultivars to late blight in 2015 and 2016. The relative AUDPC (AUDPCr) has been used to assess the level of susceptibility/resistance of the cultivars in both experimentations. The susceptible variety Spunta has been used as a reference cultivar, while the other twelve cultivars were tested for their level of resistance to *P. infestans*. The cultivars Cephora, Fabula and Big Rossa have shown a moderate level of resistance and appear to be an excellent alternative to the susceptible cultivar Spunta, which is widely grown throughout the country. However, the cultivars Passion, Coquine and Sarpo Mira have exhibited a high level of resistance, and therefore, they could represent an alternative means in an integrated control strategy of potato late blight in Algeria. **[Lyes Bininal (Algeria), Department of Botany- The National Higher School of Agronomy- ENSA- El Harrach-Algiers- Algeria under the supervision of Professor Zouaoui Bouznad (Doctorate, 2023)].**

Activities of the regional office of Food and Agriculture Organization of the United Nations – Near East and North Africa

FAO strengthens national capacities to surveillance and manage cactus cochineal in the Mediterranean

Marrakesh December 12-14, 2023.

FAO organized the technical meeting to strengthen national capacities for surveillance and managing the cactus cochineal in the Mediterranean region, as well as the general meeting of the FAO - ICARDA International Technical Network on Cactus (CactusNet) in Marrakesh, Morocco, in cooperation with the Ministry of Agriculture, Maritime Fisheries, Rural Development and Water and forests, Morocco, and the Mohammed VI Polytechnic University. With the growing threat of cochineal in the Near East and North Africa (NENA) region and its significant threat to livelihoods, greater collaboration is needed to combat and contain the spread of the pest. A recent report by FAO (2022) on the status of Cochineal and Opuntia spp. in the NENA Region developed a NENA strategy and a road map for future actions to control the cactus cochineal in the region.

The cactus cochineal is one of the most dangerous invasive pests that has left a trail of devastation on livelihoods and rural farms in the past decade. The insect infected 100,000 ha of cactus pear in Brazil and caused losses of USD 100 million as well as economic and social problems for rural communities. Its presence has been reported in the NENA region in Lebanon (2012), Palestine (2013), Morocco (2014), Syria (2018), Jordan (2018), and recently in Tunisia (2021). “Due to its rapid spread, it poses a threat to the rest of the Mashreq and Maghreb countries.” said Thaer Yaseen, the Regional Plant Protection

Officer at FAORNE. He added that national strategies for the IPM of cactus in the region are still limited due to farmers' lack of awareness and that the use of biological control and resistant varieties is still under research.

Mr Yaseen emphasized FAO's commitment to supporting and strengthening the national capacities to combat the threat of cactus cochineal in the NENA region.In his opening speech, Mr Abdelaziz Bousraf, Regional Director at the Ministry of Agriculture, stated that within the framework of the Green Morocco Plan, Morocco implemented several projects for agriculture development, which contributed to increasing the technical capabilities of farmers and the marketing value of the cactus.

After cactus cochineal was reported, an integrated work plan was developed to combat its spread. Within the "Generation Green" strategy, 23,000 hectares of resistant cactus varieties will be planted nationwide by 2024. Mr Abdelhak Laiti, Assistant Representative of FAO in Morocco (Programme Officer) added that FAO supported Morocco in tackling cactus cochineal's significant economic and environmental impacts by implementing the TCP project during 2017-2018.

The project developed a surveillance and emergency action plan and strengthened the national capacities to establish cactus germplasm collection with resistant varieties, implement biological control methods and enhance the awareness of local farmers through the FFS.Ms Makiko Taguchi, Agricultural Officer from FAO's Plant Production and Protection division, highlighted FAO's longstanding collaboration with ICARDA on Cactus Pear research and promotion through CactusNet (www.cactusnetwork.org). The network prompts technical cooperation by disseminating information, exchanging field experience and databases, and publishing scientific research from cactus cultivation to market.

The technical meeting brought together relevant government, academic, and private sector actors from the NENA region and worldwide to take stock of the latest situation of cochineal infestation in the region and discuss practical actions to implement the recommendations made in the FAO report. The meeting was supported by a group of cactus and cochineal experts from the FAO-ICARDA CactusNet. The general meeting of CactusNet was held following the technical meeting to discuss the work plan for 2024 and the next International Cactus Congress.

SusaHamra: New Weapon in the Fight Against Red Palm Weevil

Tunisia Becomes First Country to Adopt Innovative RPW Monitoring System

Tunisia December 7, 2023

The Food and Agriculture Organization of the United Nations (FAO) has announced the official launch of SusaHamra, a new mobile application and online platform designed to combat the devastating Red Palm Weevil (RPW). This pioneering system marks a significant step forward in the fight against this invasive pest that threatens date palms, coconut palms, and ornamental palms worldwide.

Workshop Empowers North African Countries

A three-day workshop held in Tozeur City, Tunisia, from December 5th to 7th, 2023, brought together over forty plant protection professionals from Algeria, Libya, Mauritania, Morocco, Oman, and Tunisia. The workshop provided comprehensive training on RPW visual inspection protocols, trapping techniques, and data collection using the SusaHamra app. Additionally, participants learned how to validate data using the PlantVillage Platform and leverage the RPW platform for mapping and analysis.

Urgent Need for Enhanced Monitoring and Control

The Red Palm Weevil, native to South Asia, has rapidly spread across the globe, causing widespread damage to date palms and impacting livelihoods and the environment. Despite ongoing efforts, control measures have proven insufficient. Recognizing the urgency of the situation, FAO developed the SusaHamra system to facilitate the effective management of RPW infestations.

Combining Mobile applications and Online Platforms for Effective Monitoring

The SusaHamra system comprises a mobile application for field data collection and a cloud-based platform for data analysis and visualization. This integrated system allows users to record RPW sightings and trap catches, collect GPS data, and upload information directly to the platform. The platform then processes and analyzes the data, generating maps and reports that provide valuable insights for informed decision-making.

Building on the Success of Existing Systems

SusaHamra draws upon the success of other FAO monitoring systems, such as eLocust3M for locust control and FAMEWS for armyworms management. This robust system offers a comprehensive solution for RPW monitoring and control, enabling timely interventions and effective pest management strategies. Like its predecessors, SusaHamra is powered by the PlantVillage platform at Penn State University. This collaboration ensures that the system leverages the latest technological advancements and benefits from continuous improvement. The system was fully developed by FAO's financial and technical resources.

Tunisia Leads the Way with National Adoption

Tunisia has taken a decisive step by becoming the first country to adopt SusaHamra as its official national RPW monitoring system. This commitment demonstrates the potential of this innovative tool and paves the way for wider implementation across the region and beyond. During the workshop, all other participating countries confirmed their interest in following Tunisia in adopting the system.

Combating the Red Palm Weevil Together

The launch of SusaHamra marks a significant milestone in the global fight against the Red Palm Weevil. This collaborative effort, led by FAO, empowers countries with the necessary tools to combat this devastating pest and protect their vital palm resources. As more countries join the fight and utilize SusaHamra, we can collectively mitigate the impact of RPW and ensure the sustainability of palm cultivation for generations to come.

https://www.fao.org/transboundary-plant-pests-diseases/news/detail/susahamra--new-weapon-in-the-fight-against-red-palm-weevil/en

FAO attend COP28 to discuss the global efforts to combat climate change

UAE November 30 and December 12, 2023

The 2023 United Nations Climate Change Conference (COP28) hosted by the United Arab Emirates in Dubai will occur between **30 November and 12 December.** The Conference is set to be a landmark event in the global effort to combat climate change and ensure food security for present and future generations. COP28 brings together world leaders, policymakers, scientists, and stakeholders from across the globe to deliberate on strategies and commitments that will shape the future of our planet. For FAO, COP28 serves as a platform for collaborative dialogue, knowledge sharing, and decision-making on the unique role of agriculture and food systems in the fight against climate change. **Agrifood system solutions are climate solutions**. At the heart of climate action, they help build resilience, adapt to climate change and reduce GHG emissions while safeguarding biodiversity and ensuring food security for all. Co-hosting the Food and Agriculture Pavilion for the second consecutive year, FAO is at COP28, advocating for global action on climate, agriculture, and food security. It will lead events and support member countries with technical advice both within and outside the climate negotiations. FAO is also one of the main partners of the Water4Climate Pavilion, a collaborative effort of over 60 organizations to unify and amplify the voice of the international water community within climate spaces. https://www.fao.org/climate-change/fao-at-cop-28/en

FAO participates in the first international forum and exhibition for sustainable agriculture in Saudi Arabia

Saudi Arabia, Riyadh, November 20-22, 2023

Under the auspices of His Excellency Eng. Abdulrahman Al-fadhli, Minister of Environment, Water, and Agriculture (MEWA), the first international forum for sustainable agriculture, was launched in Riyadh, Kingdom of Saudi Arabia, under the theme “Agricultural development and optimal use of natural resources”.

The forum aims to discuss and address challenges, explore new innovative solutions for a more sustainable future in agriculture, and draw global attention to the most recent technological advances in agriculture. The forum will bring together experts from the industry, policymakers, thought leaders, and participants worldwide.

This diversified gathering offers a one-of-a-kind platform for collaboration and fostering global partnerships in sustainable agriculture. The forum is organized by the National Center for Research and Development of Sustainable Agriculture (Estidamah) and with the participation of the Food and Agriculture Organization (FAO), other organizations, and more than 50 researchers from 25 countries for discussing the latest research and developments, in several topics, including climate-smart agriculture, precision agriculture, Integrated Pest Management (IPM), marketing, and sustainable food value chains and investment in sustainable agriculture. During his participation in the forum, Mr. Thaer Yaseen, Regional Plant Protection Officer at the Food and Agriculture Organization of the United Nations Office in the Near East and North Africa, stated that the agricultural sector is the common thread that holds the 17 SDGs together more than any other sectors and that can turn the world's challenges into opportunities and can play an essential role in addressing the hunger, poverty, and world food security issues. Also, we need innovative tools and approaches across the Agri-Value Chain to make our agriculture more sustainable.

He also stressed that the NENA region faces many threats caused by pests and diseases, exacerbated by weak surveillance systems, poor national phytosanitary regulations, emergency response, early detection, and the absence of regional cooperation and coordination. Mr. Yaseen also stated that the IPM for Sustainable Agriculture is a knowledge-based approach that requires a holistic view and strong collaboration among all the stakeholders. All partners (governments, farmers, scientists, civil society, extension services, farmers' associations, and the private sector) should design, finance, and implement the IPM program. The forum features lectures, seminars, discussions, presentations, and workshops led by international specialists on the most recent practices, research, and studies in sustainable agriculture. It provides a venue for national and international businesses to display and exchange their most recent ideas and experiences in sustainable agriculture. https://t.ly/B7WMZ

Regional Workshop Production, Conservation and Utilization of Certified Propagative Materials for Fruit Trees in NENA Countries

Rabat (Morocco), November 14 - 16, 2023

Plant Certification is defined as a domestic programme consisting of the multiplication, distribution, and production of plant materials intended for release either domestically or for export under an officially sponsored certificate attesting to the status of the material. Plant certification programmes aim to produce and distribute high-quality planting

materials free from systemic diseases and pests. Certification programmes generally establish eligibility rules for nurseries, growers, and other plant suppliers. Only those plants registered, evaluated, indexed, and approved by the competent national authority to be free from any systemic diseases may be certified.

Only plants that have been registered, indexed, and approved as free of systemic illnesses by the competent national government may be certified. Lack or shortage of healthy and improved planting material is a significant constraint to the sustainable intensification of agricultural production.

The situation in the NENA region is worsened by the lack of efficient systems for producing and disseminating high-quality planting materials; thus, many farmers are forced to rely on traditional regeneration and production for their supply. Usually, this lengthy process results in small amounts of plant materials that are highly likely to be infected with plant pathogens. Well-formed and healthy propagative material is crucial for the economic production of fruit trees. The health of the plant material must be ensured during production to prevent the mortality of plants and the spread of pathogens to new areas, which result in an increase in costs and a reduction in yield. To overcome these constraints, certified propagative materials are of the utmost importance.

The specific objectives of the workshop are

- Strengthen the technical capacities of nursery organization and management of the Production of Certified Fruit Trees;
- Identify gaps and needs for establishing and managing sustainably the certification systems;
- Defining proposals for capacity building on plant certification schemes in the region.

https://www.fao.org/neareast/events/details/regional-workshop--production--conservation---utilization-of-certified-propagative-materials-for-fruit-trees-in-nena-countries/en

Expanding Egypt's Horticultural Exports Through Improved Food Safety Compliance

Egypt, Cairo, October 28, 2023

Following a three-year project to help position Egyptian horticultural products on the global stage through improved compliance with international food safety standards, the EBRD and FAO met with project stakeholders across the value chain in Cairo to present achievements reflecting on lessons learned and plan next steps.

Putting food safety on Egypt's export portfolio

The European Bank for Reconstruction and Development (the EBRD) and FAO have been working closely with Egyptian authorities and the private sector to improve Egypt's access to high-value export markets and to scale up investment, including in its horticulture sector. The project, which focuses on strengthening compliance with food

safety standards to enable access to these markets, is supported by the European Union through the Trade and Competitiveness Programme.

The export of fresh fruits and vegetables is the fastest-growing segment of the agribusiness sector in Egypt. Citrus fruits are the most exported product from Egypt, generating an export value of more than USD 920 million in the concluded 2022 – 2023 agricultural season. It is a sector with the potential to grow even further if the right level of support and scaling-up investment is provided to help companies meet the increasingly stringent food safety standards required in Egypt's main international markets.

At the closing workshop, the EBRD and FAO gathered project participants and partners to present achievements, key findings, and recommendations to consider progress and discuss how to sustain future efforts. "To remain competitive, the private sector needs to adjust to changes in market conditions constantly," said Mohamed Mansour, Principal Banker, Agribusiness, the EBRD. "Learning how to identify these changes and adapt allows it to remain relevant. This requires engagement with actors along the value chain to encourage alignment and coordination for compliance requirements at every level of the production process."

Participants to the workshop included government representatives from the National Food Safety Authority (NFSA), the Central Lab of Residue Analysis of Pesticides and Heavy Metals in Food (QCAP), the Central Administration for Plant Quarantine, as well as exporters and private associations such as the Agricultural Export Council (AEC) and the Horticultural Export Improvement Association, and agronomic and pest and disease control practitioners.

From needs assessment to capacity building

The project started with a needs assessment to evaluate the main factors that affect compliance with international food safety standards in Egypt's main export-oriented fruit and vegetable value chains.

This included assessing adoption levels of different production and post-harvest practices to minimize the pesticide residue levels in horticulture products. It also helped identify regulatory and inspection gaps which if addressed, would help producers better adhere to quality and safety standards. A study to identify crops with high export potential that are sensitive to border rejection resulting from food safety compliance issues was also conducted. The needs assessment informed the development of a capacity-building programme to support both the private sector and Egyptian regulatory bodies to streamline food safety checks across the various supply chains and create better conditions for compliance.

Topics covered in the programme included food safety standards, pest and disease control, pesticide management, and incoming EU Green Deal regulatory changes, supplemented by detailed guidelines for five target crops – citrus, grapes, medicinal and aromatic plants, strawberries, and tomatoes – which outline specific food safety standards required for each by key export markets. "FAO strives to support actors in the Egyptian agrifood sector to meet international food safety standards," said Nasredin Hag Elamin, FAO Representative in Egypt. "Capacity development and knowledge sharing on best practices are central to supporting decision-makers and practitioners meet market requirements and position Egyptian agricultural products on the global stage."

Achievements, lessons learned and next steps

The closing workshop included the presentation of a new market study focused on expanding Egyptian Horticultural Exports to Europe. Findings include how twelve

horticultural products accounted for about 80 percent of the total value of agricultural exports in Egypt in 2021 and that European countries, especially those with distribution centres such as the Netherlands, Germany and Italy, and those with high demand like the United Kingdom, are in the top ten main destinations for Egyptian horticultural products. Also important are those with advanced logistics hubs such as France. The study underlines the importance of adapting to the regulatory changes happening in the EU, particularly those included in the EU Green Deal affecting the use of presently prohibited insecticides, such as chlorpyrifos, to sustain market access for Egyptian exporters and encourage sustainable practices. "We believe it is a priority to share the most recent knowledge and information with all workers across the supply chain to ensure transparency and support traceability efforts at every stage from farm to fork and to ensure food safety for Egyptian produce," said Mr Abdel Hamid Demerdash, Chairman of AEC. The work implemented by FAO and EBRD in the context of this project, with support from the EU, has brought attention to the importance of addressing food safety issues as key enablers of Egyptian horticulture exports.

This has contributed to a better understanding of the sector's challenges to remain competitive and has stimulated renewed concerted private and public efforts to address these challenges. Contact: Mohamed Moussa, FAO Egypt- ECTAD, Tel: (+2) 02 333 1 6000 (Ext. 2542).
https://www.fao.org/egypt/news/detail-events/en/c/1656368/

African countries harness scientific advances in digital technology to improve their technical capacity to prevent plant pests

Cairo, September 25, 2023

Eleven African countries are taking part in a training on advanced plant health science and state-of-the-art digital tools that will better equip field staff and administrators to make timely decisions to prevent plant pest outbreaks. The Train-the-Trainer workshop, taking place from 25-29 September 2023 in Cairo, Egypt, introduces the first phase of the Africa Phytosanitary Programme (APP), a new regional initiative designed to profoundly boost the technical capacity of Africa's phytosanitary personnel in all 54 countries.

The novel programme, led by the International Plant Protection Convention (IPPC) Secretariat, in collaboration with the African Union Commission on Agriculture, aims at equipping national plant protection organizations with science-based approaches, advanced technology and tools to monitor, prevent, detect, and manage significant plant pests and diseases that threaten food security, the environment and economic growth. Africa loses billions of dollars in crop damages yearly from pests, which impacts food security and economic growth. One example of these pesky pests is Fall Armyworm, which causes about USD 9.4 billion in loss of crops annually.

Globally, as much as 40 percent of crop yield is lost to plant pests, which translates to

about USD 220 billion in economic losses. Addressing the pest problem in Africa calls for the use of science and technology to timely detect pests of economic and environmental significance to help policy makers and plant health communities make informed decisions on pest prevention, containment or eradication, and trade-related matters. At the training, each participant received the most current scientific approaches and state-of-the-art electronic data collection and reporting tools for timely decision-making on pest prevention.

A customized mobile app will improve the efficiency of field staff in collecting, recording and using data on plant pests, even in remote areas with no internet connection. Data is automatically updated once the device is back online, allowing personnel to take the necessary steps to prevent or respond to a pest threat. The app also provides guidelines on how to detect a wide range of pests that each participating country has listed as a priority for monitoring and prevention.

Training participants are from Cameroon, the Democratic Republic of Congo, Egypt, Guinea Bissau, Kenya, Mali, Morocco, Sierra Leone, Uganda, Zambia and Zimbabwe - the countries in the first phase of APP.

They are expected to train field staff in their respective countries in a bid to strengthen national capacity to prevent pests. Speaking on behalf of the Minister of Agriculture and Land Reclamation in Egypt, Dr. Ahmed Abdelmageed, the Egypt Plant Protection Research Institute Director, officiated at the workshop and welcomed participants. " We as the Egyptian government are certain that the training will lead to the composition of a pool of experts who will spread and disseminate the knowledge and technology to their countries at the end of the day.

Thanks to IPPC and FAO, the African countries will be able to mitigate the risks and enhance the abilities of detection, diagnosis and pest monitoring," he said. "We also think that the training will support the achievement of the SDGs, Egypt 2030 Vision and Africa 2063 Vision," he added. "The connections between plant pests, crop losses and food shortages are evident in Africa," said Jennifer Moffitt, Under Secretary of Agriculture for Marketing and Regulatory Programs, United States Department of Agriculture (USDA). "With plant pests undermining crop production and causing losses between 30-60 percent annually, the need for effective pest management strategies that address the detrimental effects of plant pests and animal diseases is critical," she said. "To deal with plant pests, the IPPC is working with the Food and Agriculture Organization of the United Nations (FAO), the African Union, USDA, and partners to strengthen the capability of phytosanitary experts in the region. Increased capacity through the Africa Phytosanitary Programme will help safeguard food security and limit trade disruption of plants and plant products, ultimately contributing to achieving national, regional and global development goals," said Osama El- Lissy, IPPC Secretary. "On behalf of the IPPC community, we express our sincere appreciation and gratitude to the government of Egypt for its leadership and for hosting this important event," he said. "The tools we are using in today's training, generously developed and shared by the Animal and Plant Health Inspection Service (APHIS) at USDA, will sharpen the technical competencies of Africa's plant health experts and grow their arsenal of tools against plant pests," he added. Low capacity in phytosanitary diagnostic and reporting infrastructure remains a key weakness in Africa's plant health system, as highlighted in the Plant Health Strategy for Africa 2022-2036.

The APP is envisioned to fill the gap by empowering national authorities with the capacity

to detect and respond to plant pests rapidly. “To help African countries eliminate hunger and reduce poverty by raising economic growth through agriculture-led development, it is essential to enhance the continent’s phytosanitary capacity and its productivity in the agricultural sector”, said Ms r. Sandrine Mariella Bayendi- Senior Scientific Officer on behalf of Her Excellency Josefa Sacko, the African Union Commissioner, Department of Agriculture, Rural Development, Blue Economy and Sustainable Development. Be assured that the African Union Commission with its mandated Specialized Technical Office, the Inter-African Phytosanitary Council (IAPSC) will provide the overall strategic coordination among NPPOs and RECs; while continuing to foster the plant health strategy for Africa on the continent. “The Africa Phytosanitary Programme intends to enhance African regional collaboration on emerging plant health issues, especially those related to food security, climate change and economic growth. I, therefore, urge participants to seize this opportunity to learn more to address the burning plant health problems in the continent by protecting agriculture and natural resources against the introduction and spread of plant pests and diseases,” she added. “Plant protection is essential for ensuring food security and sustaining livelihoods of many farmers, producers and rural communities in Africa. Amidst a host of challenges, from pest outbreaks, conflicts, civil instability, and climate change, many African countries face difficulties in ensuring plant health and maintaining functional phytosanitary systems,” said Dr Thaer YASEEN Regional Plant protection officer on behalf of Dr AbdulHakim Elwaer, FAO Assistant Director-General and Regional Representative for the Near East and North Africa. “On behalf of FAO, I congratulate the IPPC and partners for starting the Africa Phytosanitary Programme, which I believe will help countries to improve their capacity to collect, produce and analyse data for policy formulation and improved plant protection”, he added. **https://rb.gy/vy4mh3**

FAO holds training for Farmer Field Schools facilitators on managing date palm pests in Tunisia

Tunis, September 18, 2023,

Within the framework of the regional programme for Red Palm Weevil (RPW) management in the Near East and North Africa region, the Food and Agriculture Organization of the United Nations (FAO) is holding a training programme for Farmer Field Schools (FFS) facilitators on managing the Red Palm Weevil (RPW) and other date palm pests in Tunis from 18 to 22 September 2023. The training is attended by FAO regional experts and trainers and more than 20 trainees from Tunisia and Libya.

The program aims to enhance the capacities of agricultural specialists to establish, implement, and manage FFSs; enhance the skills and capacities of farmers to manage the RPW and other date palm pests, and adopt good agricultural practices. “Tunisia and Libya play a vital role in the date sector, as Tunisia is ranked at the top of the list of date exporting countries in the world, accounting for a large share of the global trade

volume of dates, with USD 280 million worth of dates exported in 2021," said Thaer Yaseen, Regional Plant Protection Officer at the FAO Regional Office for NENA. "Recent studies evaluating RPW social and economic impact in NENA showed that the annual cost of RPW management programmes amounted to approximately 5.7 million USD in Egypt and about 34.4 million USD in Saudi Arabia. This called for training programmes to control the RPW in the region through scientific research, capacity building of farmers and workers in the date palm sector, and exchanging technology and information between countries in the region," explained Yaseen. "The Maghreb region, which includes Morocco, Algeria, Tunisia, Mauritania, and Libya, produces about 15 percent of the global production of dates, "said Dr Mohamed Rabeh Al-Hajlawi, Director General of Plant Health and Control of Agricultural Inputs at the Tunisian Ministry of Agriculture, Water Resources and Fisheries. "Date production in Tunisia is witnessing increasing interest, making the date sector one of the most important pillars of the economy.

The planted area with date palms has increased over the past 20 years to 40 thousand hectares, approximately 5.4 million palm trees. Its production rate reached 195 thousand tons, including 135 thousand tons of the Deglet Nour variety, significantly impacting the national economy," added Al-Hajlawi. "Although date palm farmers are considered the main link in all control programs, their participation in most countries in the region remains limited," stated MohamedelHady Sidatt, Plant Protection Officer at the FAO Sub-Regional Office for North Africa. He pointed out that this workshop contributes to strengthening this participation, the intervention of farmers to support state efforts, in addition to building the capacities of national officials and enhancing the coordination between the state and the farmers' sector.

"The workshop aims to prepare human capacities to supervise FFSs in both Tunisia and Libya for the Integrated Pests Management of date palm pests as well as RPW," added Sidatt. RPW is a serious pest that attacks around 40 species of palms in more than 50 countries, causing widespread damage to palm trees and other crops and affecting production, farmers' livelihoods, and the environment. The Regional programme for RPW management in NENA has developed five working groups in the areas of RPW monitoring and early detection, activating the participation of farmers, developing RPW control protocols and techniques, studying RPW social and economic impacts, and developing phytosanitary systems and border protocols, as well as producing certified palm propagation materials for sustainable RPW management. https://www.fao.org/neareast/news/view/en/c/1651097/

International Plant Protection Convention and FAO hold the annual regional plant health workshop in Saudi Arabia

Plant Health for environment protection

Al-Qassim, September 4, 2023,

The Secretariat of the International Plant Protection Convention (IPPC), in collaboration with the Food and Agriculture Organization of the United Nations (FAO) Regional Office for Near East and North Africa (NENA), the Near

East Plant Protection Organization (NEPPO), and the National Center for the Prevention and Control of Plant Pests and Animal Diseases (WEQAA) are holding the 2023 IPPC regional workshop for the Near East and North Africa region (NENA) from 3-6 September 2023 in Buraidah, Al-Qassim, Kingdom of Saudi Arabia. The workshop, which is part of the IPPC Secretariat's annual regional workshops, will allow participants to discuss pertinent plant health issues in the region.

The theme is "Plant Health for Environmental Protection". "The Near East and North Africa region (NENA) faces many threats from plant pests and diseases, as plant pests cause severe losses to agricultural production.

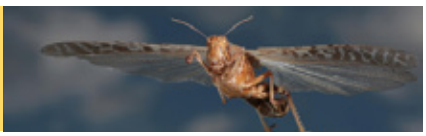
These losses amount to 25-40 percent of the total global production. The effect of pests on agriculture in our region, coupled with increased movement of trade and people and the ease of movement of plant materials, compounds the risks facing the NENA economy", said Abdelhakim El-Waer, FAO Assistant Director-General and Regional Representative in the NENA region.

"This is in addition to other challenges such as political unrest, economic and humanitarian crises, weak phytosanitary systems, and lack of good coordination among the countries of the region ", he added. "The Kingdom encourages joint work with the relevant authorities concerned with protecting plant health regionally and internationally, based on the Kingdom's keenness on global food security and achieving sustainable growth in the region in line with the "Kingdom's Vision 2023," affirmed Mr. Ayman Al-Ghamdi, CEO of WEQAA Center. Al-Ghamdi stressed the importance of holding IPPC's annual regional workshop as an important tributary and knowledge bank that connects regional plant protection organizations in the region to exchange and discuss various phytosanitary issues. "The goal of this workshop is to provide national plant protection organizations (NPPOs) in the region with current information related to IPPC, and to formulate valuable comments on draft International Standards for Phytosanitary Measures (ISPMs). The workshop will enable participants to make regional recommendations for a global consultation on critical plant health topics.

Participants will enhance their phytosanitary capacities, improve their awareness of all activities related to the IPPC, and exchange experiences at the regional level", explained Thaer Yaseen, Regional Plant Protection Officer at FAO's Office for the Near East and North Africa. "Our greatest strength lies in the dedication, passion and expertise of the plant health community. We can achieve a lot by working together to adopt and implement international phytosanitary standards", stated Osama El-Lissy, IPPC Secretary. "The transboundary nature of plant pests makes it difficult for any single country to adequately address the challenge of plant pests that threaten food security alone", said Arop Deng, Integrated Support Team Leader at the IPPC Secretariat. Therefore, the annual workshop provides an opportunity to foster collaboration in plant health matters, ensure the safe trade of agricultural commodities, and enhance food security within and outside the NENA region.

The IPPC annual regional workshop is an exceptional platform for regional representatives of IPPC contracting parties to share insights, expand cooperation, and promote plant health at the national, regional, and global levels by reviewing the draft of international standards for phytosanitary measures that aim to standardize global measures to facilitate international trade while preserving national plant resources. **Related information:** Website: International Plant Protection Convention (IPPC)

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



Desert Locust Situation

WARNING LEVEL: CAUTION. CENTRAL REGION OUTBREAKS

General situation during November 2023 Forecast until mid-January 2024
Provided by the FAO Desert Locust Information Service (DLIS).
General Situation

CALM SITUATION CENTRAL REGION OUTBREAKS

Four local Desert Locust outbreaks developed during November. This year, the winter season started earlier than usual along the Red Sea and Gulf of Aden coasts due to the Indian Ocean Dipole and El Niño in the Horn of Africa. A few swarms laid in Sudan and Somalia, while groups occurred in Eritrea and Saudi Arabia. Hatching started, and hopper groups and bands increased during the breeding in Sudan, Eritrea, Somalia, and Saudi Arabia, where control was done. Yemen had some hoppers and adults, while Egypt had a few adults. In the Western Region, low numbers of adults were seen in Mauritania, Niger, Western Sahara, and Algeria. During the forecast, breeding will cause locusts to increase during the first generation along the Red Sea and Gulf of Aden coasts from December and January. The latest weather models predict more rain than usual along both sides of the Gulf of Aden and perhaps the southern Red Sea coast, but the northern Red Sea coast is uncertain.

Nevertheless, a second generation of breeding is expected from late January to April, which would cause locust numbers to increase further with more groups, bands, and some swarms to form. Control operations should continue. No significant development is likely in the Western and Eastern Regions.

Western Region: Calm

SITUATION. Isolated and scattered adults in Mauritania (179 ha treated), Niger, Western Sahara and Morocco, and Algeria; isolated hoppers and a few small groups in western Mauritania.

FORECAST. Low numbers of solitarious adults will remain in the northwest and north of Mauritania, southern Western Sahara and Morocco, and in central Algeria.

Central Region: Caution

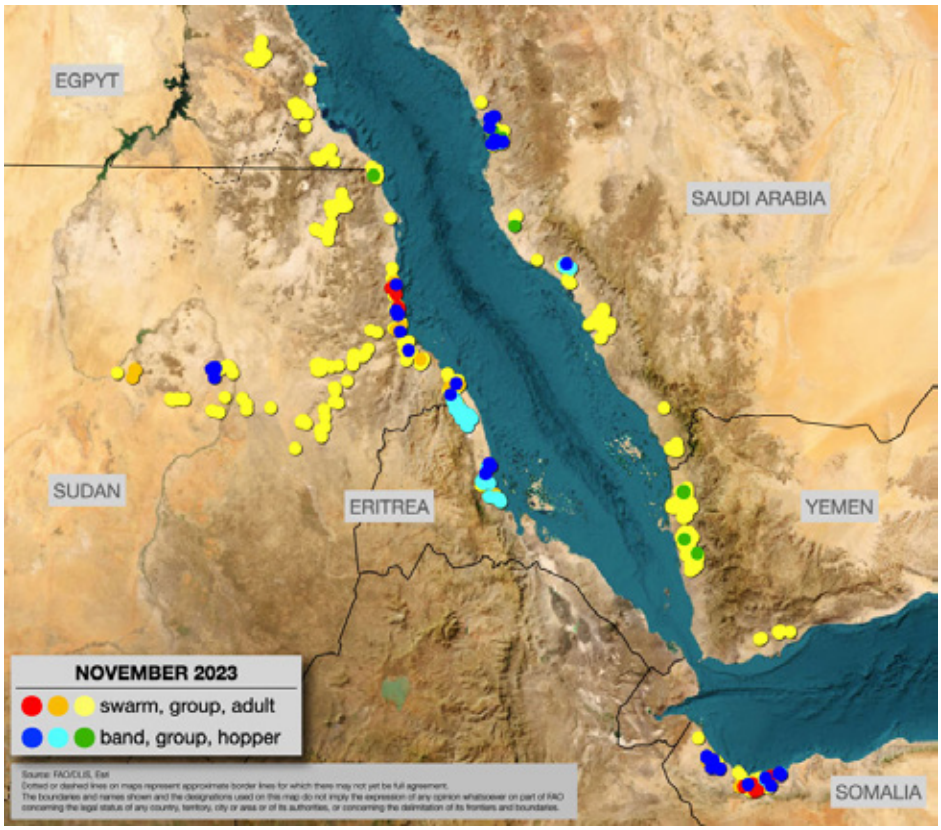
SITUATION. Local outbreaks developed along the Red Sea coast of Sudan (1 628 ha treated), Eritrea (8 665 ha), Saudi Arabia (687 ha) and the Gulf of Aden coast in northwest Somalia (178 ha) are due to adults, groups, and swarms laying with hatching and hopper groups and bands from the first generation of winter breeding. Egypt and Yemen had only scattered locusts. The summer area in the interior of Sudan was nearly finished.

FORECAST. The first generation of winter breeding will increase during December and January. If more rains occur, a second generation will develop from the second half of January to April, causing more groups and some bands and swarms to form in Sudan, Eritrea, Saudi Arabia, Somalia, and perhaps Yemen and Egypt.

Easter Region: Calm

SITUATION. No locusts are present.

FORECAST. No significant developments are likely



Map No;1 locust situation November 2023

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).

Other activities of the Commission for Controlling the Desert Locust in the Central Region

The Commission

The Commission for Controlling the Desert Locust in the Central Region (CRC) has significantly improved the region's ability to respond to desert locust outbreaks by prioritizing capacity building. Capacity building is crucial for effectively implementing locust control strategies and plans, as it helps build a pool of skilled and experienced locust control personnel. Additionally, it raises awareness of the desert locust problem and promotes regional cooperation in locust control. Thus, the Commission is committed to enhancing the ability of countries in the region to respond to desert locust outbreaks.

Training course on locust control techniques and sprayer maintenance, United Arab Emirates, Abu Dhabi- Alain, 1-6 October 2023

In cooperation with the Ministry of Climate Change and Environment, the Commission for Controlling the Desert Locust in the Central Region (CRC) organized a training

course on Locust Control Operations and Sprayer Maintenance. Eighteen participants from different regions in the UAE attended the training course. The training course covered all aspects of the Desert Locust control techniques, ULV sprayer operations and maintenance, not limited to the following:

1. Survey and control operations, control methods and strategies. The use of field equipment, GPS, compass, maps and put into practice in the field;
2. Control strategy and technologies, drop and droplet behaviour, atomization, different types of spraying equipment, pesticide groups and formulations and swath width by hand-held sprayers were demonstrated in the field. Correct calibration of sprayers and measurement of pesticide flow rate. Safety procedures in pesticide handling and storage and using the spray-monitoring form were also addressed.

Training course on locust control techniques and sprayer maintenance, Iraq, Baghdad, 15-19 October 2023

In cooperation with the Ministry of Agriculture, the Commission for Controlling the Desert Locust in the Central Region (CRC) organised a Locust Control Operations and Sprayer Maintenance training course. Twenty-two participants from several governorates participated in the training course. The course was designed for a wide range of participants, including government officials, plant protection officers and other stakeholders involved in desert locust management. The course covered a wide range of topics, including:

- The biology and ecology of the desert locust.
- Desert locust survey and monitoring methods.
- Desert locust control methods, including chemical and biological control.
- Maintain and operate the locust control equipment (ULV sprayers).

High-Level Emergency Consultative Meeting for Member Countries of the Commission Cairo, Egypt, 29-30 November 2023

The Commission for Controlling the Desert Locust in the Central Region organised a High-Level Emergency Consultative Meeting for Member Countries, Cairo, Egypt, 29-30 November 2023.The meeting discussed the development of the Desert Locust situation and its spread in several of the Commission's countries, the measures needed to intervene and assist the countries concerned, and the development of an executive action plan. The meeting concluded with an emphasis on early preparation to combat locusts and the need to take all necessary measures to protect the food security of the affected countries. Furthermore, it was recommended that the most affected countries be provided the necessary support and assistance to help them confront the anticipated locust swarms.

Workshop / FAO strengthening countries' capacities in desert locust risk reduction in East Africa and the Middle East.

Preparing to respond to Desert Locust emergencies is fundamental in preventing and controlling desert locust outbreaks.

Therefore, the Commission for Controlling the Desert Locust in the Central Region (CRC), in cooperation with FAO's Locusts and other Transboundary Plant Pests and Diseases, organised a workshop on emergency planning and reducing the risk of desert locusts in the central region and the Horn of Africa" in Jordan from 3-7 December 2023. 17 technical officials participated in the workshop From Egypt, Ethiopia, Iraq, Jordan, Kenya, Somalia, and Syria. The participants facilitated various working sessions that included (presentations and interactive discussions) in addition to field simulations. The participants also reviewed and updated national emergency plans and preparedness for emergencies. The event also entailed exchanging Experiences among participants from various participating countries, including:

- Variations in desert locust campaigns per different situations and field simulations for emergency preparedness.
- Significance of desert locust emergency components for the regional response.
- Desert locust emergency components and their importance in the regional response.
- Assistant tool to help the national Locust units to be better prepared to cope more effectively with the incident of a desert locust emergency.

CABI – providing plant protection knowledge resources for the Middle East and beyond

Whether you're a researcher in need of cutting-edge resources, a practitioner interested in training and professional development, or a farmer in need of practical advice, CABI provides the know-how and turns evidence-based information into actionable advice for making critical decisions.

CABI is an intergovernmental, not-for-profit organization. Its mission is to improve people's lives worldwide by providing information and applying scientific expertise to solve problems in agriculture and the environment. The organisation is over 100 years old and works on humanity's biggest challenges, including hunger, poverty, gender inequality, climate change and biodiversity loss. To deliver on its mission, CABI focuses on six areas of expertise, one of which is publishing and knowledge sharing through CABI Digital Library.

CABI and the Middle East and North Africa

CABI has a long relationship with academic institutions and universities in the Middle East region. CABI's sister organisation, *SciDev.Net*, is the world's leading source of reliable and authoritative news, views and analysis about science and technology for global development. *SciDev.Net* is a global outlet and has a dedicated news desk for the Middle East and North Africa. Their news coverage and stories win awards, including on plant health, such as this article on palm irrigation technology in Algeria.

CABI's expertise in plant protection

CABI plays a crucial role in plant protection worldwide. It has led a large number of plant health and plant protection projects in many countries. Working with donors and partners, the organisation helps to share knowledge about plant health with smallholder farmers to help them grow more and lose less. CABI also has expertise in invasive species management. Invasive species are organisms, including diseases, insects and plants, that have been moved from one part of the world to another without their natural enemies, where they then spread and thrive. Invasive species can have a devastating impact on plant health. CABI scientists estimate that in Africa alone, invasive species cause $65.58 billion of damage each year.

The CABI Compendium – introducing the Invasive Species Channel

CABI Compendium is another valuable online resource for plant protection. It brings together data and research across species, pests and diseases into one comprehensive resource. This online resource comprises eight channels to help users browse content more easily, and one of the channels is dedicated to invasive species. This channel provides detailed coverage of invasive pests, plants, fungi and animal diseases to help support decision-making in invasive species management worldwide.

CABI Compendium's Invasive Species channel is an open access resource and enables users to identify and manage plant pests in the Middle East. It includes datasheets covering key invasive species across the region, including fall armyworm and *Prosopis juliflora*. CABI Compendium datasheets support students, researchers and practitioners in discovering relevant, in-depth scientific information and data within their area of interest.

Along with images and maps, CABI Compendium also includes links to decision support tools such as CABI's Horizon Scanning Tool, Pest Risk Analysis Tool and a new addition – the Invasive Species Discovery Tool.

CABI's expertise in plant protection and knowledge sharing

An important part of plant protection is knowledge sharing, and here, CABI combines its scientific expertise with its expertise in publishing to create the PlantwisePlus Toolkit. This online resource is a collection of digital advisory tools that support the decision making of agricultural advisors, including extension officers and agro-input dealers. With the Toolkit, advisors have access to the latest information on pest distribution, diagnosis, pest management and more.

The toolkit contains two specific tools for plant protection support: The Crop Sprayer App and CABI BioProtection Portal. The Crop Sprayer App helps users calculate the correct amount of pesticide to buy and use for safer and effective applications.

CABI BioProtection Portal is the largest open-access global resource for registered biocontrol and biopesticide products and information. It includes a search tool for locally registered bioprotection products sourced from governments. It also gives free access to educational resources, including certified online courses, pest and crop guides. In 2022, CABI published a working paper revealing how use of CABI BioProtection Portal increases awareness of safer plant protection products among farmers and agricultural advisers in Kenya.

A dedicated programme for plant health – PlantwisePlus

In 2011, CABI and its partners launched Plantwise to help address plant protection. Plantwise was a global programme led by CABI, which helped farmers lose less of what they grow to plant health problems. Working closely with national agricultural advisory services, CABI established a global plant clinic network under this programme, run by trained plant doctors, where farmers could access practical plant health advice. Plant clinics worked just like clinics for human health: farmers visited with samples of their crops, and plant doctors diagnosed the problem and made science-based recommendations on ways to manage it. Between 2011 and 2020, Plantwise reached over 50 million farmers.

In 2021, CABI launched PlantwisePlus. This programme continues to support farmer advisory services with technical training, such as plant doctor training, but that support is now one part of a much bigger programme. PlantwisePlus responds to the needs of farmers and the systems that support them, helping them predict, prevent and prepare for plant health threats and reduce crop losses. The work of PlantwisePlus helps to ensure that smallholder farmers not only produce more food but also improve its quality, especially in the face of a changing climate. With more than 100 years of scientific research and application underpinning our work, CABI supports study, practice and professional development through a wide array of publishing products, research services and support tools.

Arab Society for Plant Protection News

Participation of ASPP Executive Committee members in the 12th International Congress of Plant Pathology

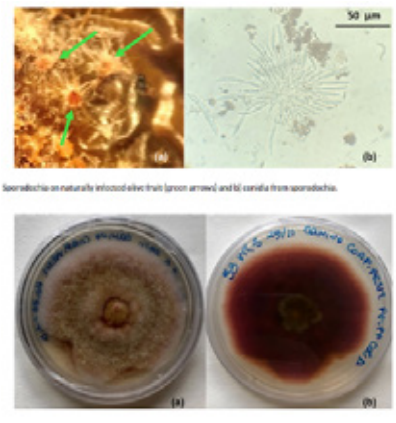
The International Society of Plant Pathology (ISPP), in collaboration with the French Plhytopathological Society (FPS) organized the 12th International Congress of Plant Pathology, held in Lyon, France, from 20-25 August 2023.

Around 2400 pathologists and plant health researchers from 101 countries met to discuss their latest research as well as current and future issues facing plant health experts. The Congress host, the French Phytopathological Society, has set an exciting and challenging theme for the congress, "One Health for all plants, crops and trees".

This topic provided a broad platform for talks, posters, and discussions focused on the integral nature of plant health with human, animal and environmental health. The Scientific program of the congress included seven plenary sessions, 66 concurrent sessions and many roundtable discussions, in addition to around 1300 poster presentations. Three colleagues from the Arab Society for Plant Protection (ASPP) Executive Committee participated in this event, namely Safaa Kumari (Syria), Emad Al-Maaroof (Iraq) and Khaled Makkouk (Lebanon) .In addition to their participation in the congress, they attended the International Society of Plant Pathology (ISPP) council meeting on behalf of the ASPP. A few scientists from different Arab countries participated in this event. In the closing session, as in previous congresses, ISPP gave the "Fellow Award" to few selected scientists (around 10) from around the world on the basis of research achievements and service to the regional and international scientific communities. Among the awardees, Dr. Khaled Makkpouk, the Editor-in-Chief of the Arab Journal of Plant Protection, was honored with such an award. Dr. Makkouk is the first Arab scientist to receive such an award since the ISPP's establishment in 1968.

NEWS OF ASPP MEMBERS ABROAD

First report of the *Fusarium arthrosporioides/avenaceum* complex causing olive fruit rot in Italy



Olive (*Olea europaea*) is affected by different fungal pathogens causing fruit rot which decreases the overall productivity in terms of oil quantity and/or quality (Lazzizera et al., 2008). In autumn 2022, rotting fruits bearing red-yellow mycelium and ochre sporodochia were observed in different olive batches of cultivars Leccino and Canino delivered to an oil mill in Viterbo province, Italy. To investigate the causal agent, the olives were surface sterilised in 2%

NaOCl for two minutes, rinsed three times with sterile distilled water and sectioned with a sterile scalpel. Sections were plated on potato dextrose agar (PDA) and incubated at 25°C for 15 days. The fungal colonies produced abundant fluffy white aerial mycelium with a yellow to red pigmentation when viewed from the bottom. Macroconidia were slender, slightly curved, from 5 to 7 septate, with a tapering apical cell, a foot-shaped basal cell, and measured 46.8 - 64.6 × 3.9–4.5 µm. Microconidia produced on PDA were sporadic, unicellular, or with a single septum and measured 8.5–13.5 × 3.5 - 5.0 µm**. [F. Brugneti, S. Turco, M. I. Drais, I. Giubilei, A. Mazzaglia, New Disease Report, 48,e12198. 11 July 2023].** https://doi.org/10.1002/ndr2.12198

Grapevine Vein-Clearing Virus is Mealybug-borne but not mealybug-transmitted

Fsalim@coagri.uobaghdad.edu.iqThis article investigates the ability of two types of mealybugs, citrus (*Planococcus citri*) and longtailed (*Pseudococcus longispinus*) mealybugs, of acquiring and transmitting *Grapevine vein-clearing virus* (GVCV) in a greenhouse setting. Mealybugs are the primary vectors for most Badnaviruses, and only a few species have been shown to be aphid-transmitted. In this study, we tested the acquisition and transmission ability of two mealybug species using GVCV-infected and healthy grapevines in a greenhouse setting for three consecutive seasons.

This study determined that acquisition time by the mealybugs could be as low as three days, yet the transmission of GVCV from infected grapevines to healthy grapevines by these two mealybug species was unsuccessful. Additionally, with the use of previously-developed species-specific primers, this study determined that those mealybugs captured in the greenhouse facilities at the University of Missouri could not be identified using these primers, and required primers that were specific to their regional diversity. This study contributes to the wider understanding of the acquisition and transmission of GVCV by certain mealybug species. **[Luaay K. Khalaf[1*],(Iraq), Yu Zhang[2] and Mustafa Adhab[1], [1]Department of Plant Protection, Coll. of Agric. Engi. Sci., University of Baghdad. [2]Division of Plant Sciences, University of Missouri-Columbia, Missouri, USA. Iraqi Journal of Agricultural Sciences, 54(5):1469-1477,2023].**

luaay.k@coagri.uobaghdad.edu.iq;mustafa.a@coagri.uobaghdad.edu.iq,, https://doi.org/10.36103/ijas.v54i5.1846

Asian Citrus Congress-2023 (ACC-2023)

Indian Society of Citriculture (ISC), in association with ICAR Central Citrus Research Institute, India; Asia-Pacific Association of Agricultural Research Institutions, Thailand and Korean Society for Citrus and Subtropical Climate Fruits, South Korea, organized the “Asian Citrus Congress-2023” on Advancing Citriculture for Agro-economic Prosperity from 28th to 30th October 2023 in Nagpur The “Asian Citrus Congress-2023” which is first of its kind in the world .300 delegates from across the world, have discussed various aspects of Citriculture of different Asian countries at length. The congress has Plenary and Keynote lectures on multiple themes, followed by oral and poster presentations. From the Arab Society of plant protection, Dr. Malika Meziane, the director

research laboratory of crop production and protection at Hassiba Benbouali University, Chlef, Algéria participated in the congress and presented together with Dr. Ali Arouss SAMİR from the same institution research entitled: Investigation of The Presence of Citrus Tristeza Virus and in Vitro Sanitation Trials of Local Citrus Cultivars in Chlef Vally (Algeria). Dr. Meziane illustrated the recent situation of CTV in citrus orchards in Chlef Governorate (Northern West of Algeria), including the most affected varieties and the distribution map. Dr. Mezian's groundbreaking work involved selecting and subjecting infected trees from various ages and origins to a cutting-edge, in vitro technique known as somatic embryogenesis for sanitization and regeneration.

The resulting plants underwent thorough testing to determine the successful elimination of the virus. Additionally, DNA analyses were conducted to assess the genetic stability of the regenerated plants, providing valuable insights into the effectiveness of this innovative approach. **[Malika Meziane, Algéria, 2023]**

Viral synergism suppresses R gene-mediated resistance by impairing downstream defence mechanisms in soybeans.

Viral synergism occurs when mixed infection of a susceptible plant by 2 or more viruses leads to increased susceptibility to at least 1 of the viruses. However, the ability of 1 virus to suppress R gene-controlled resistance against another virus has never been reported. In soybean (Glycine max), extreme resistance (ER) against soybean mosaic virus (SMV), governed by the Rsv3 R-protein, manifests a swift asymptomatic resistance against the avirulent strain SMV-G5H. Still, the mechanism by which Rsv3 confers ER is not fully understood.

Here, we show that viral synergism broke this resistance by impairing downstream defense mechanisms triggered by Rsv3 activation. We found that activation of the antiviral RNA-silencing pathway and the proimmune mitogen-activated protein kinase 3 (MAPK3), along with the suppression of the proviral MAPK6, are hallmarks of Rsv3-mediated ER against SMV-G5H. Surprisingly, infection with bean pod mottle virus (BPMV) disrupted this ER, allowing SMV-G5H to accumulate in Rsv3-containing plants. BPMV subverted downstream defenses by impairing the RNA-silencing pathway and activating MAPK6. Further, BPMV reduced the accumulation of virus-related siRNAs and increased the virus-activated siRNA that targeted several defense-related nucleotide-binding leucine-rich repeat receptor (NLR) genes through the action of the suppression of RNA-silencing activities encoded in its large and small coat protein subunits.

These results illustrate that viral synergism can result from abolishing highly specific R gene resistance by impairing active mechanisms downstream of the R gene.

[Mazen Alazem, John Bwalya, Pai Hsuan, Jisuk Yu, Huong Cam Chu, Tessa Burch-Smith, Kook-Hyung Kim. Plant Physiology, Volume 192, Issue 4, Pages 3088–3105, August 2023]. https://doi.org/10.1093/plphys/kiad255

Xylella fastidiosa News

The 4th European Conference on Xylella: 'Research is advancing; preparedness and early detection remain key'

Organised by the European Food Safety Authority (EFSA) with the contribution of major EU and transnational research initiatives on *Xylella fastidiosa* (BeXyl, BIOVEXO, ERC MultiX and EUPHRESCO), the 4th European Conference on *Xylella* took place on 20 August 2023 in Lyon, France.

The event brought together more than 200 plant specialists on *Xylella* worldwide to discuss the state-of-the-art research to control this bacterium. The main results presented at the event included updates on the status of epidemics in the EU, advances in resistance to *Xylella* in almonds, grapes and olives, improved knowledge of its insect vectors allowing for better control, and advanced tools for early detection.

Research on *Xylella fastidiosa* is advancing in several areas, including resistant plants, insect vectors, targeted pest control strategies, and advanced technologies for early detection, such as image analysis techniques. Preparedness and early detection remain key in the fight against this bacterium that continues to threaten Europe's economy and environment.

These were the main conclusions of a global gathering of hundreds of scientific experts brought together by EFSA.

From the Arab Society of Plant Protection (ASPP), Dr Raied Abou Kubaa, Dr Elia Chueirei, Dr Michel Frem, and Dr Najat Haddad contributed to different research during the event:

- High Prevalence of Resistant Genotypes to *Xylella fastidiosa* In Natural Olive Resources Derived from The Cultivar Leccino. La Notte P., Melcarne G., Mousavi S., Mariotti R., **Abou Kubaa R.,** Altamura G., Giampetruzzi A., Ligorio A., Specchia F., Boscia D., Saponari M., Saldarelli P.
- The Potential Direct Economic Impact and Private Management Costs of An Invasive Alien Species: *Xylella fastidiosa* on Lebanese Wine Grapes. **Frem M.,** Fucilli V., Nigro F., Elmoujabber M., **Abou Kubaa R.,** La Notte P., Bozzo F., **Choueiri E.**
- Knowledge on Vector's Fauna for *Xylella Fastidiosa* Invasion Preparedness: Xylem Feeders in Albanian Olive Orchards. Kokiçi H., Çota E., Sallaku F., Limani B., Xhemali B., La Notte P., Frasheri D., **Haddad N., Frem M.,** Uka R.

1st International Plant Protection Symposium of ENSA November 21- 23th, 2023

ENSA (National Higher School of Agronomy) organised its first International Plant Protection Symposium with its two research laboratories, Phytopathology and Molecular Biology and the Plant Protection in Natural Environment laboratory. The Symposium lasted over three days, from November 21 to 23, 2023, at the Ecole Nationale Supérieure Agronomic (ENSA). The research topics presented during the symposium were structured around the symposium three main axes: crop protection in Algeria with its main problems affecting strategic crops and their management, invasive and emerging pathogens and pests, as well as the biocontrol of pests and preservation of biodiversity.

The Symposium consisted of plenary sessions in the mornings of the three days of the symposium with the contribution of Algerian and foreign specialists (by visioconference), oral communications, in the afternoons of the first two days as well as two poster sessions on the 1st and 2nd day of the symposium.

The plenary conferences in person were presented by Algerian experts who gave an overview of the phytosanitary state of different crops in Algeria as well as the methods adopted in their management by Professors Salaheddine DOUMANDJI, Abdelaziz KEDDAD, Mohamed Biche (ENSA) and Sophia TOUADI (DPVCT), an overview on the application of biocontrol of plant pests in Algeria by professors Noureddine SOLTANI (Univ. Annaba) and Bahia Doumandji (ENSA). Professor Zouaoui Bouznad (ENSA) presented a conference concerning emerging diseases in Algeria, in the same perspective Dr. Khaled Djelouah from IAM of Bari (Italy) gave an overview of invasive diseases in the world which could affect the lemon tree in Algeria. By visio-conferences, specific topics were presented, Christophe LE MAY from the Institut Agro Rennes-Angers, France, gave a conference entitled Life history traits, coinfection and epidemiological dynamics In A Parasitic Complex: The case of Ascochyta blight of Pea. The secondary metabolites involved in the interactions between plants and microorganisms were the subject of a conference presented by Prof. Francesco VINALE from the University of Naples Federico II, Naples, Italy.

Thiery Hance from University Catholic, Louvain-la-Neuve, Belgium, presented the role of endosymbiotic bacteria in insects and Perspectives of use. Dr Safaa KUMARI (ICARDA), the head of the Arab Society for Plant Protection, lectured on the importance of germplasm health in preventing transboundary spread of plant pests and diseases. The *Cedrus atlantica* associated aphid species was the subject of a conference by Francesco BINAZI (CREA-DC), Cascine del Riccio, Florence, Italy. Prof Ibrahim AL-Jboory (Baghdad

University) (IRAQ) and the Editor-in-Chief of the Arab and Near East Plant Protection Bulletin presented a conference entitled “Date Palm Pests and some IPM tools to manage them”.

A conference entitled the Inter-African Phytosanitary Council (IPC) as a regional network for the management of invasive pests: case of the fall armyworm *Spodoptera frugiperda* in Africa was presented by Saliou NIASSY, Inter-African Phytosanitary Council of the African Union (AU-IAPSC), Yaoundé – Cameroon. Oral and poster presentations addressed topics relating to Symposium main axeswith a focus on the identification and characterization of pests and diseases causatives agantes as well as control, mainly biological control by antagonistic microorganisms and plant extracts. The number of participants through plenary lectures, oral communications and posters in this symposium reached 210 participants. The creation of the Algerian Plant Protection Society was announced during the symposium. It was also announced that this Symposium associated with the Ecole Nationale Supérieure Agronomic (ENSA) will be organized in the future, initially every 3 years.

Nida’ Salem from the University of Jordan participated in the Canadian Greenhouse Conference (CGC 2023)

Dr Nida’ Salem from the University of Jordan participated at the Canadian Greenhouse Conference (cgc 2023), which was held in Negara Falls, Canada, in the period 4-5/10/2023. Dr. Salem presented a scientific research entitled “Tomato Brown Rugose Fruit Virus Pandemic”. She covered everything related to this virus, starting from its discovery and worldwide distribution, epidemiology including host range, symptomatology and transmission, genome organization and sequence diversity, virus-host interactions, detection methods and management (prevention of infection, phytosaniatry measures, hygiene and disinfection, host resistance, and biocontrol). Dr. Salem, with other scientists, have recently published a scientific review paper in the journal Annual Review of Phytopathology. **[Salem NM, Jewehan A, Aranda MA, Fox A. Tomato Brown Rugose Fruit Virus Pandemic. Annual Review of Phytopathology. Sep 5; 61:137-164, 2023]. DOI:** 10.1146/annurev-phyto-021622-120703

Workshop on the topic of High Throughput Sequencing (HTS)

The National Clean Plant Network (NCPN) presented a half-day training workshop on the topic of High Throughput Sequencing (HTS), hosted by Foundation Plant Services (FPS), a service department at the University of California, Davis. The Director of FPS, Dr. Maher Al Rwahnih, opened the workshop, talking about the history and function of HTS in the plant certification program at FPS; then, several topics were presented by FPS staff, including a description of methodologies for sample collection, sample processing, HTS library preparation, and sequencing; and data analysis and quality control as performed at FPS. Approximately 80 NCPN members from across the United States were able to attend in person or via Zoom**. [Raied Abou Kubaa, Department of Plant Pathology, University of California, Davis, USA, 26 October 2023].**

Paratracheal abscess by plant fungus *Chondrostereum purpureum*- first case report of human infection

Chondrostereum purpureum, is a plant fungus causing silver leaf disease of plants, particularly of the rose family. Here we report a case of paratracheal abscess caused by *C. purpureum*. This is the first of its kind of case wherein this plant fungus causes disease in a human. Conventional techniques (microscopy and culture) failed to identify the fungus. Only by sequencing, the identity of this unusual pathogen could be revealed. This case highlights the potential of environmental plant fungi to cause human disease and stresses the importance of molecular techniques to identify the causative fungal species. **[Soma Dutta and Ujjwayini Ray, Consultant Apollo Multispecialty Hospitals, Kolkata, 700054, India, Medical Mycology Case Reports 40, 30–32, 2023].** https://doi.org/10.1016/j.mmcr.2023.03.001**, E-mail address:** dr.somadutta@gmail.com **(S. Dutta).**

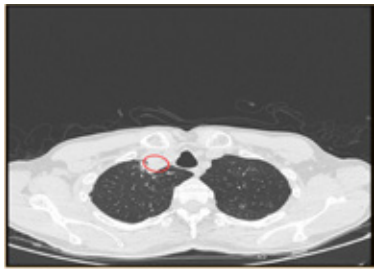


Fig: 1. CT scan demonstrated the presence of a right paratracheal abscess.

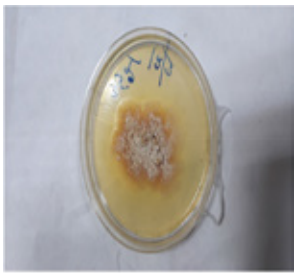
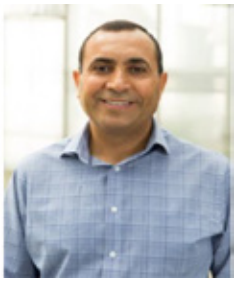


Fig: 2. Sabouraud dextrose agar showed growth of creamy pasty colony with buff coloured Pigmentation on reverse side after 4–5 day

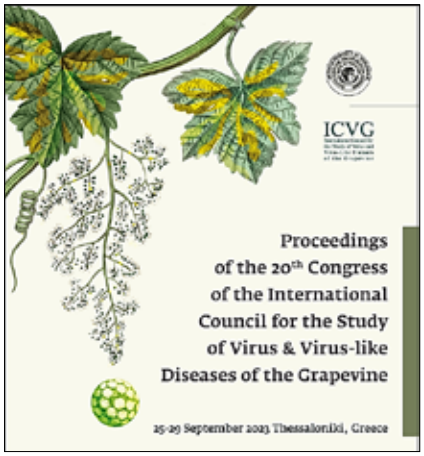
Dr. Al Maher Rwahnih



Maher Al Rwahnih, born in Jordan, obtained his Bachelor of Science in Plant Protection from the University of Jordan, Amman, in 1994. Subsequently, he worked as a Plant Protection agent for the Jordanian Ministry of Agriculture, implementing integrated pest management and outreach programs for growers. Developing an interest in plant virology, he pursued a master's degree in plant virology at the International Center for Advanced Mediterranean Agronomic Studies

in Bari, Italy. Continuing his academic journey, Maher earned a PhD in Plant Virology from the University of Bari, Italy, in 2004. He then embarked on a post-doctoral fellowship at the University of California-Davis, focusing on researching viral diseases affecting fruit trees, nut trees, and grapevines. In 2016, he won the Lee M. Hutchins Award issued by the American Phytopathological Society. Maher is the director of Foundation Plant Services at the University of California, Davis, and a lecturer in the university's Department of Plant Pathology. His ongoing research focuses on the discovery, ecology, genetic diversity, and pathogenicity of viral and other infectious diseases of annual and perennial plants. His primary research goal is to develop improved and more cost-effective diagnostic tools for detecting and analysing plant viruses. He provides technical support and advice on adopting HTS technologies for applications in routine certification testing. Maher also provides input to scientists internationally on the development of standards for use of HTS in plant diagnostics. Research conducted by Dr Al Rwahnih has resulted in over 120 publications and policy development and changes at US and international organizations for plant protection.

The 20th conference of the International Council for the Study of Virus and Virus-Like Diseases of the Grapevine was held on September 25-29, 2023



in Thessaloniki, Greece. All efforts by ICVG and its members have been made to produce clean stocks and protect them from re-infection, to advance the understanding of the nature and spread of pathogens, to develop management options, and to transfer research-based information and technology to vineyard managers and vintners. From the ASPP, **Dr. Maher Al Rwahnih**, one of the ICVG Steering Committee and chairman of the "*Certification and other management approaches" session, presented "Development, validation, and regulatory adoption of revised diagnostic protocol for quarantine and certification of Vitis Germplasm at Foundation Plant Services in Davis, California, USA*". **Dr. Al Rwahnih** also contributed to two other works in the conference entitled: (i) Occurrence of grapevine leafroll virus 3 genetic variants in Blanc du Bois, an interspecific hybrid bunch grapevine cultivar in Texas; (ii) Molecular characterization of divergent isolates of grapevine red blotch virus from Blanc du Soleil, an interspecific hybrid white grapevine cultivar. From the ASPP, **Dr. Raied Abou Kubaa,** a researcher at CNR, IPSP, Bari and currently at UC Davis, also contributed to another research entitled: High grapevine Pinot gris virus titers in grapevines showing grapevine leaf mottling and deformation. For more details about the proceedings of the 20th Congress of ICVG, please visit https://icvg.org/data/ICVG20Abstracts.pdf

Foundation Plant Services coordinated the Current Issues in Vineyard Health course on 05.12.2023

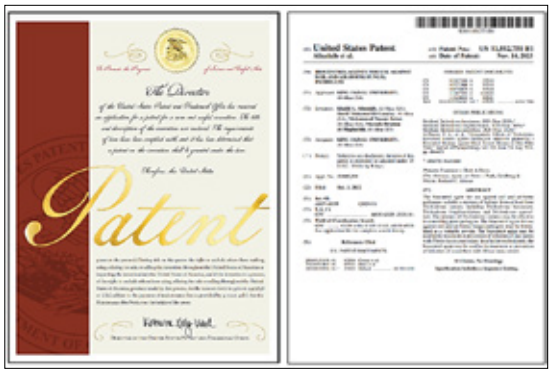
The event, which took place at the UC Davis conference center was opened by **Dr Maher Al Rwahnih,** director of FPS and one of the speakers, followed by Viki Klasseen, a researcher at FPS who presented an update on FPS research including sudden vine collapse and testing sentinel vines in the Russell Ranch vineyard. The course agenda included also several topics regarding the sanitary status and management of several diseases in grapevine such as: (1) managing fungal trunk diseases, (2) the genomics of

grape powdery mildew and implications to disease control; (3) the ecology of Pierce's disease of grapevines; (4) research update on summer bunch rot, and grapevine trunk diseases; (5) management of grapevine leafroll and red blotch diseases; (6) mitigation of spread of grapevine red blotch virus; (7) extreme climate impacts on vines and wine. Also, from the Arab Society for Plant Protection, Dr Raied Abu Kubaa, a researcher at the FPS, California, attended the training session.

Plant Virus Management: Prevention Strategy and Development of Virus Detection Methods for Quarantine and Virus-Free Plant Production at the University of California/Davis FPS

The scientific symposium titled "Plant Virus Management: Prevention Strategy and Development of Virus Detection Methods for Quarantine and Virus-Free Plant Production at the University of California/Davis FPS**"** took place on Tuesday, November 28, 2023, under the auspices of the Association of Agricultural Research Institutions in the Near East and North Africa (Arenina). Dr. Maher Al-Rwahnih, Director of the Foundation Plant Services (FPS) at the University of California/Davis and a lecturer in the Department of Plant Pathology at the same University, presented the symposium. During the event, Dr. Al-Rwahnih provided an insightful overview of the work conducted at FPS, highlighting the latest technologies employed for diagnosing, analysing, and eliminating plant viruses. He also shed light on the collaboration between FPS and American official authorities to ensure the production of clean and disease-free plants. The symposium, held via Zoom, saw participation from over 75 experts and technicians representing various research and service institutions in the agricultural sector across the Arab world. Dr. Reda Shibli, Executive Secretary of the ARENINA Union, served as the moderator for the symposium. The event concluded with active participation as all attendees participated in the discussions, and **Dr. Al Rwahnih** provided valuable guidance, which promoted the fruitful exchange of ideas among all attendees.

Patent Titled Biocontrol agents for use against soil- and air-borne fungal pathogens



The work team of the work team in King Faisal University, College of Agricultural and Food Sciences, headed by **Prof. Dr. Khaled Alhudaib**, obtained the patent for the absence and will of farmers in the field of prevention and diseases. And an absorption patent titled "Biocontrol agents for use against soil- and air-borne fungal pathogens."Through this invention, we developed an effective method using different strains of Trichoderma spp. to control a wide range of fungal diseases that cause severe losses in economic crop plants, including date palms and various vegetable crops growing under greenhouse conditions. Several isolates of *Trichoderma* were obtained from extensive field surveys in Saudi Arabia. The superior strains of *Trichoderma* species were selected from the rhizosphere of healthy plants and identified using both morphological and molecular approaches. The ability to biological control were assessed in vitro and in vivo under greenhouse conditions in Pests and

Plant Diseases Unit at KFU. Efficient formulation of *Trichoderma* isolates was developed with a long shelf life. This approach would provide environmentally friendly control to reduce the excessive use of pesticides and safeguard the agroecosystem. The end users for this product will be small and large-scale farmers as well as agricultural enterprises. All commercially available biocontrol agents in Saudi Arabia have been imported from abroad. The biocontrol agents discovered in this study have been isolated from native resources and are well-adapted with the local agro-ecological conditions. Biological control is a very complex because our bio-gents deal with multiple mechanisms and has multi-faceted approach to doing bio control, which means there is very little likelihood of resistance development of this kind of control mechanism.

Quality and Yield of Potato Seed Tubers as Influenced by Plant Growth Promoting Rhizobacteria

The International Conference on Multidisciplinary Innovation in Academic Research (MIAR-23) was held on November 6, 2023, in Paris, France. Dr. Tavga Sulaiman Rashid, Assistant Professor at the Plant Protection Department, College of Agricultural Engineering, Salahaddin University, contributed research online titled **'Quality and Yield of Potato Seed Tubers as Influenced by Plant Growth Promoting Rhizobacteria**.' As a dedicated researcher immersed in plant protection, the event fostered a dynamic exchange of ideas, allowing her to engage with fellow researchers, academics, and industry professionals from diverse backgrounds.

Dr. Tavga Sulaiman Rashid, Assistant Professor at the Plant Protection Department, College of Agricultural Engineering, Salahaddin University, contributed to a food safety training initiative conducted at Wageningen University in the Netherlands from October 8-18, 2023. This training program, an integral part of the Shiraka Program, plays a crucial role in aligning with Dutch policies to foster the development of the agricultural and food sector in the Kurdistan Region/Iraq. As a participant in this global initiative, she actively engaged in sessions dedicated to raising awareness about the paramount importance of sustainable food systems and their critical role in ensuring our food supply's safety and integrity.

1st International Webinar: Biodiversity Roles in Plants Protection in Arid Regions (BRPP.AR) Biskra, Algeria, October 18-19th 2023

Study of Variation in the Severity of Fig Mosaic Disease of Some Fig Cultivars Grown in Iraq

Successful disease management requires accurately identifying the causative agent and knowing the most resistant plant variety to a disease. Plant viruses cause substantial economic losses and pose a danger. Symptoms of fig mosaic disease were observed on Fig leaves *Ficus carica* in Iraq in 2019, and taking into account that the production of figs is constantly increasing because it has an increasing economic importance in the fruit market in Iraq, this led to an increase in research and studies focusing on this

disease. Leaf samples (140) were collected from the fig trees. Four varieties of figs (Asyod Diyala, Sultani, Wizere, Shankly), from different geographical regions of Iraq to study the disease FMD, after RNA isolation, RT-PCR tested the samples to detect six viruses associated with Fig mosaic disease, *FMV* Fig mosaic virus, *FCV* Fig cryptic virus, *FFkaV* Fig fleck-associated virus, *FLMaV-1, FLMaV-2* Fig leaf mottle-associated virus 1and 2, *FMMaV* Fig mild mottle-associated virus, Most viruses were present in mixed infections, the symptoms varied Various groups of detected viruses have been shown. Shankly variety had the fewest symptoms and With a total infection rate of 23%, of which 7.6% had overlapping infection with more than one virus, followed by Wizere variety with a total infection rate of 54% and 29% overlapping infection with more than one virus, then the Asyod Diyala variety with a rate of 60% and an overlapping infection of 44.4%. The Sultani variety was the most sensitive cultivar to the disease, as the total infection intensity reached 72.5%. The overlapping infection with more than one virus increased by 35%, knowing that the Shankli variety and the Wizere variety had a yellow fig color. The variety Sultani and Asyod Diyala varieties had a black color, which indicates that figs with yellow fruits are more resistant to FMD. The results indicate that more attention and focus should be given to cultivating resistant varieties to improve the health status of fig trees in the country. **[Al-Kaeath Nabeel Abdalla[1,2,3]., Elair Manal[1]., Naima Mahfoudhi[1] (Iraq),[1]Laboratory of Plant Protection LR16INRAT04, National Institute of Agronomic Research of Tunisia (INRAT), Rue Hedi Karray1004 ELMenzah, University of Carthage, Tunisia.[2]Department of Plant Protection, Higher Agronomic Institute of Chott-Mariem. Sousse University Tunisia. [3]Department of Plant Protection, College of Agriculture, University of Al-Muthanna, Iraq, 2023].**

An updated checklist of Meloidae mylabrini (Coleoptera) and host plants in a Saharan oasis ecosystem in Algeria

The distribution of Mylabrini species in the oasis ecosystem is scarcely known, our study aimed to improve the knowledge of the beetle fauna in this very peculiar and severe habitat, represented by isolated spots in the desert. Three large oases at the wilaya of Ouled Djellal (Oued El Assel, Oued Djdai and Saad), northern Algeria, were chosen for collecting insects. In each palm grove five pitfall traps were set up and visited every week. The content of each trap was stored in labelled vial and, identified using binoculars and confirmed by one of us. The updated checklist of the Coleopetera Meloidae from Algeria indicated the presence of 29 genera and 118 species belonging to the tribes *Cerocomini*, *Epicautini*, Lyttini (s.l.), Mylabrini, Meloini, Nemognathini. From the trap sampling we obtained three species: *Croscherichia litigiosa* (Chevrolat, 1840), *C. gilvipes* (Chevrolat, 1840), and *Mylabris impressa* Chevrolat, 1840. Different spontaneous and weeds plants were identified from each palm grove during our samplings. Among these, the most frequent plant species feed by blister beetles were flowers of *Silybium marianum* (Asteraceae), *Hedysarum carnosum* (Fabaceae), *Raphanus raphanistrum*, *Moricandia arvensis* (Brassicaceae) and *Aizoon hispanicum* (Aizoaceae) species. Even though the new records do not represent a significant range extension of the species, our collections will also improve the knowledge on their host plants in this ecosystem. **[Nacima Deghiche-Diab[1], Marco Alberto Bologna, Tesnim Deghiche, Hassan Boukerker, Meriem Boultif (Algeria),[1]Scientific and Technical Research Center on Arid Regions (CRSTRA, 07000 Biskra**, Algeria-diab_nassima@yahoo.fr **0(213) 5 42 83 35 04,** https://orcid.org/0000-0003-4544-2083) **[2]Department of Sciences, Roma Tre University, Viale G. Marconi 446, 00146, Roma. Italy-NBFC, National Biodiversity Future Center, Palermo 90133,**

Italy- https://orcid.org/0000-0003-2498-8917, **marcoalberto.bologna@uniroma3.it [3]Biological Sciences Department, Mohamed Khider University. BP 145 RP, Biskra, Algeria, 2023].** tesnimdeg@gmail.com. https://orcid.org/0000-0003-4071-0931

Contamination of date palm vitroplants: origins and contaminating agents.

Contamination is one of the problems limiting the development and survival of explants during in vitro culture of date palms. The present study aims to determine the origin of contamination (epiphytic or endophytic), and the nature of the micro-organisms responsible for contamination. If the source of contamination is epiphytic, drops of rinsed plant material (aliquots) sterilised with bleach over a period of time are deposited on the culture medium (PDA). If the fungus is endophytic, small fragments of plant material sterilised with bleach for various lengths of time are cut out and placed on the culture medium (PDA). The fungi can be identified on the Czapeck isolation medium, and the fragments and/or fungal spores are taken from already contaminated plant material. Based on the results of the microbial identification, most of the contaminants are of explant origin, and some of the contamination may be due to handling. These contaminants are of bacterial or fungal origin. The fungal flora contaminating the vitro-plants consists essentially of species belonging to the genera Penicillium, Aspergillus, Mucor and other unidentified genera. In particular, sterile mycelia are abundant and frequently contaminate the vitro-plants. The species found are ubiquitous moulds. **[Zeguerrou R[1], Tahar Chaouch S[1], Mesnoua M[1], Chaaraoui H[1]. (Algeria), [1]Centre for Scientific and Technical Research on Arid Regions (CRSTRA) Biskra,2023]. Email:** zeguerroureguia@yahoo.fr

Allelopathy as an Eco-friendly alternative to pesticides for weed control in sustainable agriculture

In agriculture, weeds present a challenge, competing with crops for nutrients, water, and sunlight causing losses in production. Pesticides are widely used for successful crop production, and controlling weeds insect pests, and pathogens, but they have a negative impact, causing the extinction of susceptible individuals in the population, with time, herbicide-resistant weeds become dominant in the ecological niche, and agricultural system, elevated risks of environmental pollution, and human health problem and These hurdles pose a substantial threat to sustainable agricultural practices. Allelopathy is a biological phenomenon that involves the release of chemicals by plants that hold the potential to function as growth regulators and the development of other plants. Allelopathy has received great attention since the 1980s all over the world, Allelochemicals can act as natural herbicides, eco-friendly alternatives to control weeds, and crop-safeguarding products. This review highlights the desirable phytotoxic effects and the complex bioactivity of allelochemicals, and how they can be applied for sustainable agricultural practices. It also discusses the current challenges and future directions of allelopathy research in relation to ecological, agricultural, environmental, and chemical aspects. **[Soltane Sabrine[1]., Benmeddour Tarek[2] (Algeria), [1]Department of Nature and Life Sciences; Laboratory of Genetic, Biotechnology and Valorisation of Bioresources ,University of Mohamed khider Biskra, Algeria..*(ORCID:**0000-0002-4405-9915),sabrine.soltane@univ-biskra.dz**. [2]Department of Nature and Life Sciences;Laboratory of Genetic, Biotechnology and Valorisation of Bioresources ,University of Mohamed khider Biskra, Algeria,2023].** t.benmeddour@univ-biskra.dz

Detection of tomato brown rugose fruit virus is influenced by infection at different growth stages and sampling from different plant parts.

Since the first report of the virus in 2014, tomato brown rugose fruit virus (ToBRFV) has spread widely through Europe, the Americas and Asia. Within Europe, there is currently a requirement for annual surveillance for the virus.

However, little is known about the relative impact of sampling strategy with respect to timing of infection and the detection of virus from different plant parts. To test reliably for ToBRFV in crops of unknown infection status, this issue needed to be addressed. To do this, two different approaches were followed:

1. inoculation experiments were conducted at two institutes to look at the relative effects of time of infection, plant parts, cropping season and cultivar on detection of the virus;
2. sampling and testing various plant parts were carried out during active outbreaks from two tomato production sites in the Netherlands to look at the effect of sampling plant parts on detection of the virus. In inoculation experiments, the greatest impact on detection was timing of infection, with plants infected early in the growth cycle showing a predictable development of infection. In plants infected later, infection was detectable in sepals (calyx) earlier than in older leaves.

In the studies carried out on commercial crops during ToBRFV outbreaks, the highest virus concentrations were obtained from testing sepals and young leaves. Thus, in a young crop where sepals and fruit are not yet developed, sampling should focus on the young leaves; in a mature crop, it may be better to sample sepals and/or fruit.

[Anna Skelton1 , Jerom van Gemert2 , Aimee Fowkes1 ,Leanne Frew1, Kinda Alraiss1 , Rachel Hodgson1 , Jessica Cressey1 , Ruud Barnhoorn3 , Roy Macarthur1 , Ineke Stijger4 , Martin Verbeek4 , Rene van der Vlugt4 , Harrie Koenraadt3 , Annelien Roenhorst2 , Marleen Botermans2 , Adrian Fox1,5,*Kinda Alraiss; Molecular Scientist in Fera Science Ltd, United Kingdom. Have a master's degree from Newcastle University, United Kingdom and a bachelor's degree from Damascus University, Syria.[1]Fera Science Limited, York, UK .[2]Netherlands Institute for Vectors, Invasive Plants and Plant Health, Netherlands Food and Consumer Product Safety Authority, Wageningen, Netherlands.[3]Naktuinbouw, Roelofarendsveen, Netherlands. [4]Wageningen Plant Research, Wageningen University and Research, Wageningen, Netherlands. [5]School of Natural and Environmental Sciences, Newcastle University, Agriculture Building, New castle upon Tyne, UK, 2023]

Doctor of Philosophy degree

Dr Tarik Hamoud Almantheri, Head of the Pest Control Department - Plant Protection Directorate at the Ministry of Agricultural Wealth, Fisheries and Water Resources in the Sultanate of Oman, was awarded during December 2023 a Doctor of Philosophy degree in Environmental Sciences from the University of Nottingham in the United Kingdom for his thesis addressed (**The potential of *Goniozus omanensis* as an agent of biocontrol in Oman)**

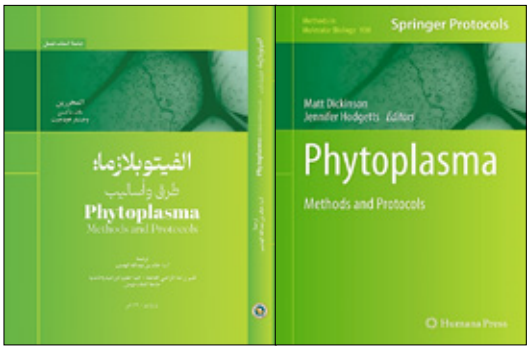
This thesis presents a series of scientific research projects to enhance the potential of the *Goniozus omanensis* (Hymenoptera: Bethylidae) as an agent of biological pest control in Oman. The enhancements include relatively straightforward considerations, such as the formal description and scientific identification of *Goniozus omanensis*, as it is a new species of parasitoid wasp first recorded as the most common natural enemy on the lesser date moth, *Batrachedra amydraula* (LDM) in Oman in 2006. Also, these enhancements include evaluating the wasp's performance for efficient mass rearing and targeted use as an agent of biological control. The first chapter provides the background of date palm agro ecology in Oman and the biological control of date palm pests. It discusses the importance of utilisation of the parasitoid *Goniozus omanensis* as a biological control agent for LDM control in Oman and related technical aspects. Next, the main principles of the thesis works performed are presented. The first empirical research work (Chapter 2) is related to the scientific identification and description of the parasitoid, based on morphological description and DNA sequence data, and its registration as a new species of Bethylid wasp that is formally named *Goniozus omanensis* Polaszek sp. n. The second empirical project (Chapter 3) evaluates two readily available species of Pyralid moths, *Corcyra cephalonica* and *Galleria mellonella*, as potential factitious hosts for *Goniozus omanensis* to use them for mass-rearing and maintaining efficient cultures of the parasitoid throughout the year.

The next project (Chapter 4) is a literature-based exploration of the date palm agro-ecosystem as an ecological community. This is achieved by extracting diet breadth records and constructing connectance trophic webs. This analysis investigates interactions between three trophic levels, between plant species with their herbivores and between these herbivores and their natural enemies, focusing on how trophic web structure might affect populations of the lesser date moth. The food webs, including and excluding consideration of intercrop species, are analysed. The final empirical project (Chapter 5) investigates the effects of insecticides, specifically the botanical (plant-derived) Neem oil, on the laboratory performance of G. *omanensis*. Sub-lethal exposure effects of insecticides on parasitoid life history are often unknown and, in the field, *G. omanensis*, is likely to be exposed to a range of agrochemicals. The thesis concludes that *G. omanensis* is a beneficial natural enemy already present in the date palm agro-ecosystem that warrants ecological attention. It is worth noting that Dr Tarik Almantheri completed his bachelor's degree from Sultan Qaboos University in 2001 and his master's degree in crop improvement from the University of Nottingham in the United Kingdom.

The Arab Society for Plant Protection congratulates Dr Tarik Hamoud Almantheri for his doctorate, wishing him continued giving in the field of biological control, one of the fields worthy of attention in our Arab countries, especially with the worsening problem of lesser date moths on palm trees in light of climate changes in recent years.

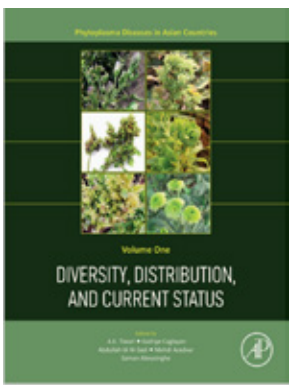
New Books

Phytoplasma Methods and Protocols



The idea of translating this book has been on my mind since its printing, as this science is considered very modern in the field of plant diseases compared to many agricultural sciences in the field of plant protection. It is considered one of the most comprehensive and up-to-date books on phytoplasma plant diseases. It is also considered the first book of its kind in terms of its composition. It is not an individual effort, but rather the effort of a large number of scientists who have worked in plant diseases, especially phytoplasma diseases, and have put most of their experience between the pages of this book so that he can benefit from it everyone interested in this field. The book contains several chapters that talk about the importance of phytoplasma plant diseases and a historical overview of phytoplasma. The book is distinguished in all its chapters by practical scientific applications. It also contains methods for preserving infected plants and insects that transmit the disease, and how phytoplasma is transmitted between plants by insects. This is followed by practical methods of diagnosis and detection, the methods of which vary from detection in the field to microscopic examination and then to PCR. It also includes several chapters on the scientific techniques used to isolate phytoplasmas and classify them into their different groups and subgroups. The final chapters include practical methods for isolate the phytoplasma genome and plasmid DNA from plant DNA, as well as identifying the complete genome map of phytoplasma. As you know, translation from one language to another requires great effort and care not to distort the meaning and purpose of the book. I have worked hard to choose the scientific terminology used and understood in this field. The Arab world needs this science, especially since many countries have this disease on many agricultural crops. I hope that the Arab reader will benefit from this book**. [Translation the book titled "Phytoplasama Methods and Protocols" by Dr. Khalid Alhudaib. King Faisal University -Saudi Arabia, 2023].** alhudaib@hotmail.com

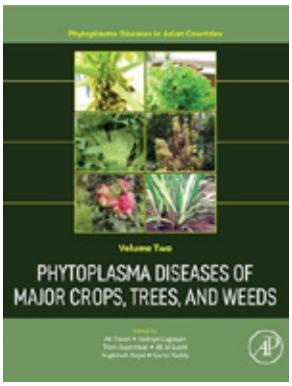
Phytoplasma Diseases in Asian Countries Volume One: Diversity, Distribution, and Current Status



Diversity, Distribution, and Current Status is the first volume in a three-volume series dedicated to the analysis of this important group of plant pathogens across Asia with a particular focus on geographic distribution. This book offers updated data on the most prevalent phytoplasma diseases specific to each region. Phytoplasmas are emerging plant pathogens worldwide, causing significant economic losses to crops and affecting international trade. The chapters in

Volume 1 look closely at different countries and regions across Asia, providing data on country-wide distribution, phytoplasma groups, insect vectors and transmission. The Phytoplama Diseases in Asian Countries series will be an essential read for university students, researchers and agriculturalists interested in Plant Pathology. Volume 1 will be of particular interest to those needing the latest data on the distribution and transmission rates specific to the various regions of Asia. **[Dr. Elia Choueiri co-wrote a chapter in this book entitled "Diversity, distribution, and status of phytoplasma diseases in Lebanon" Chapter 17, Pages 341-353, 2023].** https://doi.org/10.1016/B978-0-323-91896-1.00006-4

Volume Two: Phytoplasma Diseases of Major Crops, Trees, and Weeds

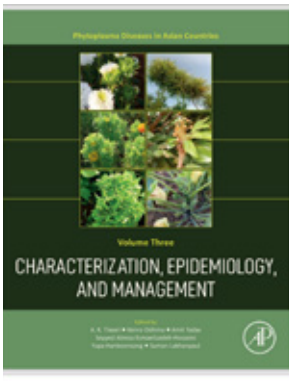


Phytoplasma Diseases of Major Crops, Trees, and Weeds is the second volume in a three-volume series dedicated to the analysis of plant pathogenic phytoplasmas across Asia. With a close look into the different types of plants affected by phytoplasma, the book offers management strategies to develop resistant plant strains. Phytoplasma diseases pose serious economic losses in many Asian countries, for which there is very little awareness within society.

The chapters in Volume 2 comprehensively review predominant plant species and how they are impacted by phytoplasma diseases, providing information on host-pathogen interaction, characterization, and genetic diversity.

The Phytoplasma Diseases in Asian Countries series will be an essential read for students, researchers and agriculturalists interested in plant pathology. Volume 2 will be of particular interest to those needing to access the latest information on plant management and successful plant breeding strategies.

Volume Three: Characterization, Epidemiology, and Management



Characterization, Epidemiology and Management is the third volume in the Phytoplasma Diseases in Asian Countries series dedicated to the analysis of plant pathogens across Asia. Highlighting genomic studies and molecular approaches for rapid detection of phytoplasma diseases, the book discusses effective control measures for insect vectors across Asia.

The chapters in this book discuss the latest biological controls and how best to manage and even eliminate phytoplasma diseases. This is an essential read for students, researchers and agriculturalists interested in plant pathology. Phytoplasma are microorganisms transmitted by insect vectors, infecting various types of annuals and perennials and causing serious damage to crops across Asia.

[Dr. Elia Choueiri co-wrote a chapter in this book entitled "Graft and vegetative transmission of phytoplasma-associated diseases in Asia and their management" Chapter 2, Pages 21-36, 2023]. https://doi.org/10.1016/B978-0-323-91671-4.00014-9

The Passing of Dr Ahmed Kamal El-Attar, IPPC contact point for Egypt

Mon, 23 Oct 2023, 15:57

The passing of **Dr Ahmed Kamal El-Attar**, IPPC contact point for Egypt and CPM Bureau representative for Near East and North Africa.With deep sadness, the IPPC Secretariat announces the passing of Dr Ahmed Kamal El-Attar, the Head of the Central Administration of Plant Quarantine (CAPQ), Ministry of Agriculture and Land Reclamation of Egypt. CAPQ is Egypt's national plant protection organization (NPPO), and Dr El-Attar was the official IPPC contact point for Egypt.

Dr El-Attar was also the Vice-chairperson of the Commission on Phytosanitary Measures (CPM) Bureau- the IPPC's governing body. He represented the Near East and North Africa (NENA) region on the CPM Bureau, since 2021, and was serving his second term. He also served as Chairperson of the Near East Plant Protection Organization (NEPPO), the regional plant protection organization (RPPO).

As a member of the CPM Bureau, he made substantial contributions to the development and implementation of the IPPC Strategic Framework 2020–2030. In his capacity as IPPC contact point for Egypt, Dr El-Attar was astute, deliberate, and committed to the work of his NPPO, NEPPO and the IPPC in protecting plant resources and facilitating safe global trade. He provided leadership for key IPPC initiatives and was a strong advocate for plant health and the urgency of protecting plant resources from pests at the regional and global levels. "The IPPC and the global plant health community have lost a strong and leading figure in the phytosanitary and plant protection field.

His research and professionalism have contributed to wide-ranging accomplishments at national, regional and international levels, towards ensuring a vibrant and progressive IPPC plant health community. We will truly miss an esteemed colleague and a dear friend to all of us in the IPPC community," said Osama El-Lissy, IPPC Secretary. The entire IPPC Secretariat and IPPC community extend their condolences to his family and friends. https://rb.gy/bwz9w

Selected Research Papers

- **Management of *Spodoptera frugiperda* J.E. Smith Using Recycled Virus Inoculum from Larvae Treated with Baculovirus under Field Conditions.** Allan Mweke, Ivan Rwomushana, Arthur Okello, Duncan Chacha, Jingfei Guo and Belinda Luke, Belinda Luke, Insects, 14(8), 686, 2023. https://doi.org/10.3390/insects14080686
- **Enhanced YOLOv5 object detection algorithm for accurate detection of adult *Rhynchophorus ferrugineus*.** Shuai Wu, Jianping Wang, Li Liu, Danyang Chen, Huimin Lu, Rui Hao, Zhao Li and Qingxuan Wang. Insects , 14(8), 698, 2023. https://doi.org/10.3390/insects14080698.
- ***Tuta absoluta*-Specific DNA in Domestic and Synanthropic Vertebrate Insectivore Feces.** Dirk Janssen, Emilio González-Miras and Estefanía Rodríguez, Insects , 14(8), 673, 2023. https://doi.org/10.3390/insects14080673

- **Plant essential oils induce the expression of heat shock proteins and antioxidant enzyme activity in the carob moth, *Ectomyelois ceratoniae* (Lepidoptera: Pyralidae).** Saeed Farahani , Ali R. Bandani, Eur. J. Entomol. 120: 161-169, 2023. DOI: 10.14411/eje.2023.021
- **Pyrethroid susceptibility and oxidative detoxification mechanism in Colorado potato beetle and western corn rootworm.** Daria Dworzańska, Joanna Zamojska, Paweł Węgorek, Paweł K. Bereś, Sławomir Drzewiecki, Plant Protect. Sci., 59(2):174-184, 2023. DOI: 10.17221/53/2022-PPS
- **The Influence of temperature on the biological activity of selected nematode species (Steinernematidae and Heterorhabditidae) under the conditions of their coexistence.** Magdalena Dzięgielewska, Krystian Kaczmarek, Katarzyna Kruk, Plant Protect. Sci., 59(2):193-201, 2023. DOI: 10.17221/104/2022-PPS
- **Biocontrol Efficacy of *Bacillus methylotrophicus* TA-1 Against *Meloidogyne incognita* in Tomato.** Huimin Liu, Guanghan Fu, Yujie Li, Shouan Zhang, Xiaoxue Ji, and Kang Qiao, https://doi.org/10.1094/PDIS-12-22-2801-RE
- **Peptide Analogs of a *Trichoderma* Peptaibol Effectively Control Downy Mildew in the Vineyard.** Angela Bolzonello, Laura Morbiato, Silvio Tundo, Luca Sella, Ivan Baccelli, Sergio Echeverrigaray, Rita Musetti, Marta De Zotti, and Francesco Favaron, Published Online**:** 11 Sep 2023. https://doi.org/10.1094/PDIS-09-22-2064-RE.
- **Seed and Pollen Transmission of Tomato Leaf Curl New Delhi Virus, Tomato Leaf Curl Taiwan Virus, and Tomato Yellow Leaf Curl Thailand Virus in Cucumbers and Tomatoes.** Ho-Hsiung Chang, Deri Gustian, Chung-Jan Chang, and Fuh-Jyh Jan, Published Online**:** 21 Jun 2023. https://doi.org/10.1094/PDIS-09-22-2164-RE
- **Epidemiology and Economic Impact of Impatiens Necrotic Spot Virus: A Resurging Pathogen Affecting Lettuce in the Salinas Valley of California.** Daniel K. Hasegawa and Alejandro I. Del Pozo-Valdivia, Published Online:20 Apr 2023. https://doi.org/10.1094/PDIS-05-22-1248-RE

PAPERS pubLished in THE Arab Journal of Plant Protection (AJPP), Volume 41, Issue 3, September 2023

ECOLOGY

The Effect of the Hight of the Pheromone Traps Type Delta in Trapping and Forecasting the Emergence of the Lesser Date Moth, *Batrachedra amydraula* Meyrick and Evaluating the Sensitivity of Some Palm Varieties to Insect Injury
M.H.A. El-Filahy, and M.Sh. Mansour (IRAQ)
Pages 226-232
https://doi.org/10.22268/AJPP-41.3.226232

Some Biological and Ecological Factors of Olive Moth, *Prays oleae* (Bern.) in Al-Quneitra Governorate, Southern Syria
E. Al-Jouri, N. Diab and M. Dawoud (SYRIA)
Pages 233-245
https://doi.org/10.22268/AJPP-41.3.233245

Phytochemical Analysis and Allelopathic Effects of Quinoa *(Chenopodium quinoa* Willd.) Grain Extract

Parasitoid Wasps of Green Lacewing, *Chrysoperla carnea* in Cotton Fields in Hama Governorate, Syria: New Records and Some Biological Aspects
M. Nabhan, Z.Sh. Khamis and B. Hawis (SYRIA)
Pages 306-313
https://doi.org/10.22268/AJPP-41.3.306313

Pathogenicity of the Fungus *Beauveria bassiana* and *Cladosporium* sp. on Different Life Stages of the Two Spotted Spider Mite, *Tetranychus urticae* Koch Under Laboratory Conditions
A. Shaabow and A. Haj Hassan (SYRIA)
Pages 314-320
https://doi.org/10.22268/AJPP-41.3.314320

The Role of *Chrysoperla carnea* (Steph.) and *Beauveria bassina* for Controlling Cabbage Aphid, *Brevicoryne brassicae* L. on Cabbage Plants
A.A.A. Saleh, H. El-Nagar, A.A. Khalifa and M.F.M. Zawrah (EGYPT)
Pages 321-326
https://doi.org/10.22268/AJPP-041.3.321326

PLANT EXTRACTS

The Mortality Effect of Some Plant Powders on the Cowpea Beetle, *Callosobruchus maculatus* Fab. (Coleoptera: Chrysomelidae)
N.A. Abuelnour (LIBYA)
Pages 327-331
https://doi.org/10.22268/AJPP-41.3.327331

BENEFICIAL INSECTS

Some Morphological Variation of Dwarf Honeybee, *Apis florea* Fab. in Northern and Southern Iraq
M.A. Alebty, I.M. Farag and K.O. Ali (IRAQ)
Pages 332-338
https://doi.org/10.22268/AJPP-41.3.332338

SELECTED GLOBAL PESTS

First report of the aphid *Anthemidaphis oligommata* (Hemiptera: Aphididae) in Turkey

During 2020 surveys, the aphid *Anthemidaphis oligommata* (Hemiptera: Aphididae) was found infesting stems of *Cota tinctoria* (synonym: *Anthemis tinctoria*) (golden chamomile) plants in Turkey. This is the first report of *Anthemidaphis oligommata* in Turkey. *Cota tinctoria* is cultivated ornamentally in the United States *Anthemidaphis oligommata* infests *C. tinctoria* and *Achillea millefolium* (common yarrow). *Anthemidaphis oligommata* has also been reported from parts of Europe and is not known to occur in the United States.

References: Görür, G., Ö. Şenol, H. Akyıldırım Beğen, G. Başer, and B. V. Akçay. 2023. A further contribution to the aphid (Hemiptera: Aphidoidea) fauna of Turkey includes a description of a new host plant associations and colony appearances. Journal of the Entomological Research Society 25(1):181-191. Last accessed August 24, 2023, from https://www.entomol.org/journal/index.php/JERS/article/view/2306, pestlens@usda.gov

First report of oak ambrosia beetle, *Platypus quercivorus* (Coleoptera: Curculionidae), in China

During 2012 to 2022 surveys in China, adult oak ambrosia beetles, *Platypus quercivorus* (Coleoptera: Curculionidae), were collected from dying *Castanopsis chinensis* trees. This is the first report of *P. quercivorus* in China. *Platypus quercivorus* mainly infests Fagaceae. *Platypus quercivorus* has been reported from other parts of Asia and is not known to occur in the United States. *Platypus quercivorus* is a known vector of the fungus *Dryadomyces quercivorus*, which is not known to occur in the United States.

References: Lai, S., J. Wang, Y. Wang, Y. Li, W. Lin, L. Meng, et al. 2023. First record of two ambrosia beetle, *Platypus quercivorus* (Murayama) and *Platypus koryoensis* (Murayama) (Coleoptera: Curculionidae, Platypodinae) in mainland China. Zootaxa 5284(2):397-400. Last accessed September 7, 2023, from https://mapress.com/zt/article/view/zootaxa.5284.2.11. **If you have any questions or comments for us about this article, please e-mail us at** pestlens@usda.gov

First report of corn cyst nematode, *Heterodera zeae* (Heteroderidae), in Spain

During surveys in 2022, eggs, immatures, and cysts of corn cyst nematode, *Heterodera zeae* (Heteroderidae), were isolated from soil and roots of stunted *Zea mays* (corn) plants in Spain. This is the first report of *H. zeae* in Spain. *Heterodera zeae* is associated with economically important plants, including *Solanum tuberosum* (potato), *Triticum aestivum* (wheat), *Hordeum vulgare* (barley), *Oryza sativa* (rice), and *Beta vulgaris* (beet). *Heterodera zeae* has also been reported from Portugal, Greece, Egypt, and parts of Asia. In the United States, it has a limited distribution in Maryland and Virginia.

References: Palomares-Rius, J. E., I. Clavero-Camacho, C. Cantalapiedra-Navarrete, L. F. Roca, A. Archidona-Yuste, and P. Castillo. 2023. First report of *Heterodera zeae* (corn cyst nematode) infecting corn (*Zea mays*) in Spain. Plant Disease. DOI:10.1094/PDIS-02-23-0362-PDN. Last accessed September 7, 2023, from https://apsjournals.apsnet.org/doi/10.1094/PDIS-02-23-0362-PDN

Events of interest 2024

22-25/4/2024	1st international conference ESIPM 2024 Building Roads and Bridges to Adopt Integrated Pest Management (IPM) Cairo, Egypt, . esipmc@gmail.com
1-5 /7/2024	20th International Plant Protection Congress in Greece. https://www.ippcathens2024.gr/concurrent-sessions/concurrent-session-proposals

The Editorial Board of The Arab and Near East Plant Protection Bulletin Highly Appreciates the Contribution of Several Arab Scientists in This Issue, namely:

Takwa Wannassi (Tunisia), M. I. Drais (Italy), Randa Mahmoudi (Algeria), Luaay K. Khalaf (Iraq), Maadh Abdulwahab Alfahad (Iraq), Ali Kadhem AL-dulami (Iraq), Nida Mohammad Salim (Jordan), Reem Aboud Alkhlif (Syria), Abdulnabi basheer(Syria), Mohamad Kanouh(Syria), Shady Mohammad Soliman (Syria), Afra' Mutee' Haider (Syria), Ziad Aleisa (Syria), Malika Meziane (Algéria), Khalid Alhudaib (Saudi Arabia), Maher Al Rwahnih (Jordan), Tavga Sulaiman Rashid (Iraq), Elia Choueiri (Lebanon), Mazen Alazem (Syria), Elhalawany, A.S.(Egypt), Nasssima Diab (Algeria), AlSarai Alalawi Mamoon (FAORNE), Heba Tokali (FAO-Egypt), Yosra Ahmed (FAORNE), Kelly Snell (CABI), Malek Robert (CABI) , Hassan Ahmad Khalil(Syria).

Special Thanks to Mohammed Zaidan Khalaf for his great inputs in sharing news and other topics to enrich the bulletin

The bulletin's editorial board invites the society members to send their scientific findings and news related to plant protection in Arab countries and elsewhere. We also invite scientists studying abroad to share their information and achievements with colleagues in this bulletin.

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