Arab and Near East Plant Protection Newsletter

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News and announcements from all on any aspect of plant protection in the Arab world are invited for the Newsletter. Contributions from the Executive Committee of the Arab Society for Plant Protection and from the four Subject Matter Committees, as well as from national societies in the Arab region dealing with any aspect of plant protection are kindly requested and highly appreciated.

EDITORIAL

Eradication Battle against the Red Palm Weevil:

Is There any Chance to Avoid Disaster Before it Happens in the Oases of Southern Tunisia?

Red Palm Weevil (RPW) (*Rhynchophorus ferrugineus*) is one of the most dangerous pests that cause heavy damages on palm trees, and it was recently spread from India to a number of Arab countries. RPW was discovered for the first time in Tunisia during late 2011 on some 30 ornamental palms (*Phoenix canariencis*) planted around Carthage municipality, showing infestation symptoms. It is most likely that the insect had entered the country around one to two years earlier by illegal importation of infested ornamental palm seedlings from Italy. Despite the effort of the Plant Protection Department by removing and burning infested trees after total cutting of the tips, cleaning them from the insect and treating all their remains on site, the unstable political situation that characterized Tunisia during the few past years and by not giving priority to this subject by the authorities, lead to the progressive pest spread since early 2013 until it reached other areas such as Kram, Soukra, Marsa and Belvedere. In addition, the pest seems presently invading the southern areas of Grand Tunis governorates and probably it entered Nabeul governorate. If the pest keeps spreading until reaching the date palm trees in southern Tunisia, the result will be a disaster because of the reduction of the oasis date production, which will negatively affect the livelihood of the people living in those regions and the Tunisian economy at large. Lately, the Ministry of Agriculture authorities recognized the coming danger and now a strong pest control program is being executed on a high number of ornamental palms in all regions where the pest infestation symptoms appeared. But, if enough attention and support was provided in early 2012, the result would have been better.

It is now essential to maximize efforts and support to the Plant Protection Department to do the necessary to restrict the pest spread, and eventually to eradicate it. At this time, it is useful to remind the authorities by the success achieved in Morocco during the past six years to prevent the pest spread out of the Tangier area in northern Morocco, and the information coming from there indicates that the pest spread areas started to shrink, which means that the battle against RPW is almost won in Morocco.

Former experiences in many other countries indicated that eradication of any pest after entering a new area is not an easy task, so it is important to increase the effort of all authorities and particularly the Ministry of Agriculture, to avoid the disaster before it happens and to resolve the battle to the benefit of the palm trees, and to protect the oases in southern Tunisia (around 7 million date palms planted in around 35,000 ha) from the risk that endanger them and potentially coming from the north of the country. It is crucial to start a national awareness campaign regarding this issue and to execute decisive measures of internal plant quarantine to prohibit the transportation of any kind of palms or parts of them from the north of the country to its south, and to punish violators by imposing strict penalties, because the battle against RPW is a national battle, where all the Tunisian people should participate to protect the natural resources of the oases in the south and to avoid a real disaster.

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❖ Crop Protection News from Arab and Near East Countries

INVASIVE AND NEW PESTS

EGYPT

First Report of *Peronospora farinose* f. sp. *spinaciae* Causing Downy Mildew on Spinach in Egypt. Downy mildew, caused by *Peronospora farinose* f. sp. *spinaciae* (= *P. effusa*) is an economically important disease in most areas where spinach is grown. This disease has become increasingly important in intensive production fields for pre-packaged salad mixes where plant densities typically are very high. However, little is known about race diversity of the downy mildew pathogen of spinach in smaller (<1 ha) production areas. Small (~0.1 ha) spinach production fields in Fayoum, Egypt, often intercropped with lettuce, were examined in February 2013. Downy mildew was observed in three spinach fields in the Fayoum area. Most of the cultivars being grown were traditional cultivars commonly grown from locally produced open pollinated seed. Disease incidence was relatively low with only about 10% of the plants showing symptoms of infection. Symptoms of downy mildew were observed on the cultivar Meky, and included chlorotic spots with blue-gray sporulation on the underside of the symptomatic leaves. Microscopic examination revealed sporangia, measuring 20.2 × 30.5 µm, and monopodial sporangiaphores of 180 to 330 µm length matching the description of *P. farinosa* f. sp. *spinaciae*. In addition, the pathogen was identified by examination of the nuclear ribosomal DNA (rDNA) internal transcribed spacer (ITS) sequence, which had 100% identity to a 762-bp ITS sequence in GenBank of *P. farinosa* f. sp. *spinaciae* (Accession No. DQ643879.1). The Fayoum area of Egypt gets relatively low annual rainfall, typically <10 to 15 cm annually, often concentrated in the winter months of November to February, followed by very hot, dry summer months. Although downy mildew of spinach has been reported in Israel, adjacent to Egypt, the disease apparently is relatively rare in the arid Middle East. This is the first known report of downy mildew of spinach in Egypt. [J. C. Correll and C. Feng, (Egypt). Plant disease, 98(7): 994, 2014].

JORDAN

Detection of Satellite DNA Beta in Tomato Plants with Tomato Yellow Leaf Curl Disease in Jordan. In Jordan, as well as many countries in the region, tomato production is threatened by begomo viruses belonging to the tomato yellow leaf curl virus complex. In 2013, an experiment was conducted at Homret Al-Sahen, Jordan (GPS coordinates 32°05′06″ N, 35°38′52″ E), to evaluate different tomato breeding lines for resistance against viruses causing tomato yellow leaf curl disease (TYLCD). Disease symptoms, typical of those caused by TYLCV complex, were observed in many susceptible lines. However, some lines exhibited unusual symptoms including severe leaf curling and stunting. To identify the causal agent of these symptoms, total nucleic acids were extracted from 21 symptomatic plants and used as templates in PCR analysis using nine primers, previously described to detect *Tomato yellow leaf curl virus*, *Tomato yellow leaf curl Sardinia virus*, and two recombinants between TYLCV and TYLCSV. In addition, the universal primer pair β01/β02 was used to investigate the association of satDNA β with the disease. The PCR products characteristic of TYLCV (664 bp) could be amplified from five plants indicating single infection, while double infection with TYLCV and satDNA β (1,320 bp) was detected in seven plants. Mixed infection with TYLCV, TYLCSV (628 bp), and satDNA β was detected in another seven symptomatic plants and only one plant was infected with TYLCV and TYLCSV. A single plant had mixed infection with TYLCV, TYLCSV, and RecA (a recombinant between TYLCV/TYLCSV) (538 bp). Amplicons obtained from two plants using β01/β02 primers were directly sequenced as 1,320-bp PCR products. Both sequences were found identical and, therefore, this sequence was deposited in the GenBank under the accession number KJ396939. Phylogenetic analysis revealed that this satDNA β sequence had the highest nucleotide (95%) identity with *Okra leaf curl virus* (OkLCV) satDNA 3 (AF397217) and OkLCV satDNA 10 (AF397215). The contribution of the satDNA β in the modulation of the TYLCD symptoms will be further investigated. Few years ago, another satDNA (Tom*β*01-Om) was reported in Oman to be associated with TYLCD. However, to the best of our knowledge, this is the first report on the detection of satDNA β in tomato plants infected with viruses causing TYLCD in Jordan. The increasing diversity of begomo viruses causing TYLCD in the region is of great concern due to the possible emergence of more virulent viruses and subsequent increased losses to tomato production. [G. Anfoka, F. Haj Ahmad, M. Altaleb, and M. Abadi (Jordan). Plant disease, 98(7): 1017, 2014].

PAKISTAN

First Report of Leaf Spot of Rice Caused by *Alternaria arborescens*in Pakistan. Rice (*Oryza sativa*) is one of the most profitable and popular cereal crops in Pakistan. In July 2012, symptoms consisting of circular, black, necrotic spots, 2 to 4 mm in diameter, were observed on leaves of a commonly grown rice cultivar, Basmati-198, in private rice fields at Lahore (Punjab). This disease was observed later on rice cultivar KSK-133 grown at Faisalabad (Punjab) during the same cropping season. Disease incidence was ~35% and 25% for Basmati-198 and KSK-133, respectively. To our knowledge, the pathogen was confined only in these areas and cultivars and was not present on other rice varieties or crops. Ten infected plants were selected randomly from each field of two rice cultivars and one infected leaf for each of the 10 infected plants was selected for the isolation of fungal pathogen. Necrotic lesions were cut into pieces of ~2 mm^2, surface-disinfected with 0.5% sodium hypochlorite, placed on 2% malt extract agar (MEA) (Sigma, Dorset, UK), and incubated at 25 ± 2°C for 4 to 5 days. Emerging fungal colonies were transferred aseptically to fresh MEA petri plates for purification. *Alternaria* spp. were consistently recovered

from infected leaves. Three isolates per variety were selected for detailed morphological studies. Each isolate was grown at 25°C on MEA and potato carrot agar (PCA) for 7 days. All isolates displayed similar morphological features including black radiate, floccose colonies with irregular margins, 6 to 7 cm in diameter on MEA and 2 to 3 cm with 1 to 2 pairs of concentric growth rings on PCA. Conidial chains were not crowded with 1 to 10 conidia per branch and bearing several lateral branches. Conidiophores were tapering and narrow, 40 to 200 × 2 µm. Conidia were ovoid within a size range of 10 to 30 × 5 to 14 µm, with 1 to 5 transverse and 1 longitudinal septum. Conidial color darkens from a dull tan to a medium brown as the culture matures. Based on morphology, the pathogen was identified as *Alternaria arborescens*. A pure culture of the pathogen was deposited in First Fungal Culture Bank of Pakistan (FCBP) with accession FCBP1351. Identification based on morphology was verified by sequencing the internal transcribed spacer (ITS) region. For this, a DNA fragment of ~650 bp was amplified using total genomic DNA as template and ITS1 and ITS4 primers. The nucleotide sequence of the ITS region was submitted to GenBank under accession KF679683. Comparison of the sequence with those in GenBank revealed that the sequence was 99% identical with *A. arborescens*, isolate ALT-242 (KC415808), causing Eucalyptus leaf spot in India and strain STE-U4345 (AF404667), a causal pathogen of apple core rot in South Africa. Pathogenicity testing was performed on both cultivars. One-month-old plants grown in greenhouse were sprayed with 10 ml of spore suspension (2×10^5spores/ml) as well as 10 ml of this spore suspension in soil at the time of sowing. Control plants were sprayed with sterilized water. The plants were covered with plastic bags for 48 h and kept under observation for 2 weeks in a glasshouse at 30 ± 2°C. Lesions appeared on leaves after 10 days of inoculation whereas control plants remained healthy. Pathogenicity tests were repeated in triplicate. Similar disease symptoms and re-isolation of *A. arborescens* fulfilled Koch's postulates. To our knowledge, this is the first report of *A. arborescens* leaf spot of rice in Pakistan. At present, the distribution of this disease is limited to the fields where it was observed. [N. Akhtar, U. Bashir, and S. Mushtaq. (Pakistan). Plant Disease, 98(6): 846, 2014].

First Report of *Curvularia lunata* Causing Leaf Spots on *Sorghum bicolor* from Pakistan. In October 2012, reddish brown, oblong lesions with chlorotic centers were observed on the leaves of *Sorghum bicolor* in Punjab Province, Pakistan. Early symptoms appeared as reddish brown circular spots on the leaves. These spots increased in size and coalesced to form oblong lesions. Entire fields were severely affected by the disease. Pathogen isolations were made on malt extract agar (MEA) media. Symptomatic leaf samples were cut into 4 to 6 mm^2 pieces, surface sterilized (10% bleach for 1 min, 90% ethanol for 30 sec) and rinsed in sterilized water several times, followed by air drying. These samples were plated onto 2% MEA media, supplemented with 10 mg/liter chloramphenicol, and incubated at 25°C for 6 days in the dark. A mitosporic fungus of dark brown colony, bearing large stroma, appeared on the media. Conidiophores were brown, septate, geniculate, simple or unbranched, with dark brown scar. Conidia were brown, straight to pyriform, with 3 to 4 cells, with large and curved central cells, smooth walled, ranging in size from 7.3 to 21.26 µm, and produced apically in a sympodial manner. Based on morphological characteristics, the pathogen was identified as *Curvularia lunata* (Wakk.) Boedijn. Morphological identification was also confirmed by the First Fungal Culture Bank of Pakistan (FCBP), Institute of Agricultural Sciences, University of the Punjab, Lahore, Pakistan, and samples were submitted to FCBP (Accession No. 1201). The fungus was further identified by amplifying internal transcribed spacer region sequences (ITS1, rDNA, ITS2) by using ITS4 and ITS5 primers. The resulting 584-bp sequence was submitted to GenBank with Accession No. HG326308. This sequence showed 99% homology with *C. lunata* strain pingxiang (GenBank Accession No. JQ701897), causing leaf spots of lotus in China. Pathogenicity assay was conducted on 20-day-old seedlings of *S. bicolor* variety Indian Gold, grown from surface sterilized seeds. Fifteen replicate plants were sprayed with a spore suspension of 1×10^6 spore/ml in distilled sterilized water, prepared from 1-week-old fungal culture, grown in the dark on 2% MEA media. Five replicate plants were sprayed with distilled sterilized water as control. Plants were covered with transparent polyethylene bags to retain moisture and enhance disease development, and kept in a greenhouse at ~30°C. Bags were removed after 5 days of incubation. Inoculated plants developed lesions similar to those observed on naturally infected plants. No symptoms were observed on control plants. The pathogen was re-isolated from infected leaves, and the morphology features were again studied, matching those of the pathogen isolated from field samples. Curvularia leaf spot diseases, caused by different *Curvularia* species, have been previously found on many grass species worldwide. To our knowledge, this is the first report of *C. lunata*leaf spots on *S. bicolor* in Pakistan. [W. Akram, T. Anjum, A. Ahmad, and R. Moeen (Pakistan). Plant disease, 98(7): 1007, 2014].

TUNISIA

First Report of *Sugarcane yellow leaf virus* Infecting Barley in Tunisia. *Sugarcane yellow leaf virus* (ScYLV) causes severe leaf symptoms in sugarcane (*Saccharum* spp.). It is a single-stranded RNA virus assigned to the genus *Polerovirus*, family *Luteoviridae*. ScYLV is transmitted by two aphid species, *Melanaphis sacchari* and *Rhopalosiphum maidis*. Although barley (*Hordeum vulgare*), oats (*Avena sativa*), and wheat (*Triticum* spp.) are susceptible to ScYLV when experimentally inoculated, this virus, related serologically to *Barley yellow dwarf virus* (BYDV)-RPV, has never been detected naturally in these cereals. In this study, 240 barley leaves were randomly collected from six fields in Tunisia following a north-south trend during the high infestation periods (March/April) in the 2013 growing season. Samples were tested by DAS-ELISA, using three antibodies (Bioreba AG, Switzerland), two of them, BYDV-B and BYDV-F, specific to luteoviruses corresponding to BYDV-PAV and BYDV-MAV, respectively, and the third one, BYDV-RPV, specific to the polerovirus synonymous to *Cereal yellow dwarf virus* (CYDV)-RPV. Based on DAS-ELISA, 30

samples were found positive for B/CYDV infection; 17 out of the 30 infected samples contained a single serotype, BYDV-PAV, and 13 out of the 30 infected samples contained two serotypes, PAV and RPV. Total RNA was extracted from all positive samples, and RT-PCR of the viral CP gene was performed with Lu1/Lu4 primers. A product of 531 bp was cloned and sequenced. The identities among the sequences determined varied between 80 to 100%, and from the 17 samples containing BYDV-PAV, six distinct BYDV-PAV sequences were revealed and named PAV-TN1 to PAV-TN6 (GenBank Accession No. JX402453 to JX402457 and KF271792). Fortuitously, all 13 positive samples corresponding to the serotypes PAV-RPV exhibited 98.7 to 99.3% identity with ScYLV isolates. These 13 samples contained three distinct sequences that were named ScYLV-Tun1 to ScYLV-Tun3 (GenBank Accession No. KF836888 to KF836890). Of the 17 PAV-positive samples collected, six were infected with PAV-TN1, four with PAV-TN2, four with PAV-TN3, one with PAV-TN4, one with PAV-TN5, and the last one with PAV-TN6. Of the 13 ScYLV-positive samples, seven were infected with ScYLV-Tun1, four with ScYLV-Tun2, and two with ScYLV-Tun3. Phylogenetic analysis showed that PAV-TN sequences formed a very tight cluster (>98%) corresponding to BYDV subspecies PAV-II, whereas all three Tunisian ScYLV sequences were clustered together. This study provides the first report of ScYLV isolates infecting barley crops in Tunisia, and confirms serological cross-reactivity between ScYLV and BYDV-RPV when commercial antibodies against BYDV-RPV are used. [M. Bouallegue, M. Mezghani-Khemakhem, H. Makni, and M. Makni (Tunisia). Plant disease, 98(7): 1016, 2014].

TURKEY

First Report of *Phytophthora syringae* on *Cedrus libani* in Turkey. *Cedrus libani*, commonly known as Lebanon cedar, is one of the most important coniferous tree species in Turkey. Its main distribution is in the Taurus Mountains in the Mediterranean Region. The total area of pure Taurus cedar forest covers 109,440 ha in Turkey, all located in the southwestern regions of the country. Due to its drought resistance, Taurus cedar has been commonly used for afforestations in these semi-arid areas. In September 2011, during surveys for *Phytophthora* spp. in forest nurseries in Adapazari and İzmir in eastern Turkey, initial symptoms such as death of fine roots, yellowing, and wilting of Taurus cedar seedlings were observed. Soil samples were collected from 10 symptomatic *C. libani* seedlings and isolation tests for *Phytophthora* species were carried out using leaflets from young *Quercus suber*, *Azalea* sp., and *Rhodendron* sp. saplings as baits floated over flooded soil. Necrotic baits were blotted dry, cut into small pieces, and placed on selective PARPNH carrot agar. Out growing colonies were subcultured on carrot agar and kept at 12°C for morphological and molecular identifications. In total, six *Pythiaceous* isolates were obtained from the *C. libani* soil samples. The isolates were investigated using a light microscope and grouped according to their morphological characteristics. DNA was extracted from two representative isolates using Qiagen DNeasy Plant Mini Kit following the manufacturer's instructions. PCR amplifications and sequencing of the internal transcribed spacer (ITS) region of rDNA and the β-tubulin gene were performed using ITS1 and ITS4 and Tub1 and Tub2 primer sets. Sequencing of the PCR products in both directions was conducted by IonTek Inc. (Istanbul, Turkey) in an ABI PRISM automated sequencer. The obtained sequences were compared with those in the GenBank and Phytophthora database using BLAST search. On the basis of morphological features and molecular analyses, the two isolates were identified as *Phytophthora syringae*. Morphological characteristics on carrot agar were identical with the description of *P. syringae*. At 20°C, colonies reached 7 cm in diameter after 1 week. Sporangia were semipapillate to non-papillate, ovoid, with average length of 59 µm (SD ± 2.8) (range 58 to 70 µm). Oogonia were 38 µm (SD ± 5.4) in diameter (range 30 to 47 µm) with paragynous antheridia. The morphological identification was confirmed by sequence comparison at GenBank with 99% homology for both ITS and β-tubulin. The ITS sequences of the two isolates were deposited in GenBank with the accession nos. KF430614 and KF944377. Under-bark inoculation tests with mycelia plugs were conducted with both isolates of *P. syringae* at 18°C in a growth chamber on a total of six 1-year-old shoots cut from two *C. libani* trees. Lesions with an average length of 19 mm (SD ± 6) developed after 10 days. *P. syringae* was consistently re-isolated from the margins of necrotic tissues. Control shoots remained symptomless. To our knowledge, this is the first report of damage caused by *P. syringae* on *C. libani* seedlings in forest nursery in Turkey. T. Doğmuş-Lehtijärvi, A. G. Aday Kaya, A. Lehtijärvi, and T. Jung. (Turkey). Plant Disease, 98(6): 846, 2014].

First Report of *Diaporthe neoviticola* Associated with Wood Cankers of Grapevine in Turkey. In recent years, delayed bud bursting, cane bleaching, shoot dieback, and cankers in 1-year-old canes and perennial arms were observed in vineyards of the Aegean region (western Turkey). These symptoms were frequently observed on the following major table grape (Vitis vinifera) cultivars: 'Alphonse Lavallée,' 'Cardinal,' 'Sultana Seedless,' and 'Trakya Ilkeren' in 2012. To determine the causal agents, symptomatic woody tissues (0.5 cm^2) were sampled from the canes of nine Manisa and four Salihli Cities (13 total) grapevine varieties and were plated onto potato dextrose agar amended with tetracycline (0.01%) (PDA-tet). A considerable amount of phomopsis-like fungi were isolated from the symptomatic tissues and fungal colonies were incubated for 2 to 3 weeks to induce sporulation. After incubation for 14 days at 24°C in the dark, white mycelial growth with undulating colony margins, and abundant pycnidia producing hyaline, ellipsoidal, fusoid α-conidia with invisible nuclei, and β-conidia, were observed on PDA, and they resembled species in the Diaporthaceae. The α-conidia dimensions were 9.3 to 10.2 × 1.9 to 2.9 µm (avg. 9.7 × 2.4 µm) and β-conidia were 19 to 24 × 0.5 to 1 µm (avg. 22 × 0.9 µm). For molecular identification, fungal DNA was extracted from mycelial mats and ribosomal DNA fragments (ITS1, 5.8S ITS2 rDNA, amplified with ITS4 and ITS5 primers) (3) were sequenced and the sequences were compared with those deposited in NCBI GenBank in a BLASTn search. The representative isolate (MBAi43AG) showed 99% homology with *Diaporthe*

neoviticola isolate from New Zealand KC145831.1. The DNA sequence of the identified isolate was submitted to GenBank under accession number KF460427. Pathogenicity tests were conducted under controlled conditions (24°C, 16/8 h day/night, and 70% RH) on 1-cm-diameter, detached green grapevine cv. Cabernet Sauvignon canes (with leaves) using the isolate of *D. neoviticola* specified above. The shoots were wounded by creating a 5-mm-diameter incision with a sterile scalpel. An agar disc with mycelia and pycniospores was placed into each wound and covered with Parafilm. Sterile PDA plugs were used as mock inoculum for the control plants. There were 10 replicates per treatment and the experiment was repeated twice. After 1 month of incubation, the green shoots were examined for the extent of superficial blackish lesions. The average lesion length on inoculated shoots was 18.2 mm for *D. neoviticola*. No lesions were observed in the control shoots. The fungal isolate was successfully re-isolated from 96% of inoculated shoots to fulfill Koch's postulates. To our knowledge, this is the first report of *D. neoviticola* causing wood canker and dieback of shoots on grapevine in Turkey. [D.S. Akgül, J. S. Mayorquin, and A. Eskalen. (Turkey). Plant Disease, 98(5): 692, 2014].

First Report of *Diplodia pinea on Pseudotsuga menziesii*in Turkey. *Diplodia pinea*is a latent, opportunistic pathogen of *Pinus* and other coniferous species, including *Pseudotsuga menziesii*. The fungus causes twig blight, branch cankers, tree and seedling collar rot, root rot, and can also infect cones. *D. pinea* has often been reported causing tip and shoot blight on various *Pinus* spp. in different parts of Turkey. During disease surveys on *Pinus* spp. carried out in May 2012 in Izmit in the Marmara Region (37°36′54″N, 31°20′00″E), typical shoot blight symptoms of *D. pinea* infection were also observed on the neighboring *P. menziesii* trees. Shoots and cones of *P. menziesii* were investigated for the presence of *D. pinea* pycnidia. Pycnidia from cones and shoots were placed on potato dextrose agar (PDA) and incubated at 23°C. Three isolates were obtained from shoot and cone samples. Identification of the pathogen was based on morphological characteristics of the conidia and by PCR of the ITS region of nuclear rDNA. Colonies on PDA were woolly, whitish at first turning black, sometimes partly or entirely turning light gray. Micromorphological characteristics of the *Diplodia* isolates were similar to those described in: conidia width 18.4 µm (SD ± 2.8) (range 11 to 22 µm) × length 34.0 µm (SD ± 5.3) (range 20 to 41 µm) (n = 100). Conidia were at first hyaline, later becoming brown to dark brown, oblong ellipsoid, bicellular with a distinct septum. To confirm the identity of the isolates, genomic DNA was extracted and the internal transcribed spacer (ITS) region of the rDNA was amplified using primers ITS1 and ITS4. Amplicons were 483 bp in length (GenBank Accession No. KF372874) and shared 98% nucleotide identity with HM100285.1 and 97% nucleotide identity with JX981458.1 of *D. pinea*. Inoculation tests were performed on 2-year-old *P. menziesii* seedlings by placing mycelial plugs of three isolates obtained from pycnidia on the main stem after wounding with a cork borer. Control seedlings were inoculated with PDA plugs without mycelium. All seedlings were incubated at 24°C for 3 weeks in a climate chamber. Following incubation, the seedlings displayed dark brown-to-black discoloration, measuring on average 10.7 ± 0.6 cm, of the bark and wood tissues around the inoculation points on the stems. The pathogen was successfully re-isolated from symptomatic stem tissues, thus fulfilling Koch's postulates. To our knowledge, this is the first report of *P. menziesii* as a host of *D. pinea*in Turkey. *P. menziesii* is not endemic to Turkey and to date has a limited distribution (approximately 140 ha), but it is an important fast growing tree species for new industrial plantations. [A.G.A. Kaya, A. Lehtijärvi, Ö. Kaya, and T. Doğmuş-Lehtijärvi. (Turkey). Plant Disease, 98(5): 689, 2014].

RESEARCH HIGHLIGHTS

EGYPT

Etiology of stipe necrosis of cultivated mushrooms (*Agaricus bosporus*) in Egypt. Internal stipe necrosis of cultivated button mushrooms (*Agaricus bisporus*) is caused by the bacterium *Ewingella Americana*(Enterobacteriaceae), which is part of the endogenous bacterial population in mushroom sporocarp tissues. Isolation of the causal agent of stipe necrosis led to the recovery of three bacterial morphotypes. *Ewingella Americana* was isolated from 90% of mushroom samples showing mild stipe browning, while *Pseudomonas fluorescens* and *P. tolaasii* were also isolated. Inoculation with *E. Americana* into button mushroom sporocarps yielded typical browning symptoms which were distinguishable from those of the bacterial soft rot. This bacterium was re-isolated and its identification was verified, thus fulfilling Koch's postulates. However, inoculations with *P. fluorescens* and *P. tolaasii*ca used no stipe browning. The strain identities were verified by biochemical identification and through analysis of their 16S rRNA gene sequences. This study has outlined the etiology of stipe necrosis of cultivated button mushroom in Egypt, and is the first report of *E. americana*in this country. [Adel K. Madbouly, Einas H. El-Shatoury, Mohamed A. Abouzeid. (Egypt). Phytopathologia Mediterranea, 53(1): 124-129, 2014].

Chemical composition, insecticidal and repellence activities of essential oils of three *Achillea* species against the Khapra beetle (Coleoptera: Dermestidae). Essential oils of *Achillea biebersteinii*, *Achillea santolina* and *Achillea mellifolium* were obtained by hydrodistillation and analyzed using gas chromatography/mass spectrometry. The plant oils were tested for their toxic and repellent activities against the Khapra beetle, *Trogoderma granarium* (Everts) (Coleoptera: Dermestidae). *T. granarium* was sensitive to the oils via topical application, contact and fumigation bioassays, where *A. biebersteinii* oil was the most toxic regardless of the technique used. Using topical application, a dosage of 15 µg/mg insect of *A. biebersteinii* oil was sufficient to kill 100 and 83.2.0 % after 7days exposure of adults and 2nd instar larvae, respectively. Meanwhile, twice this concentration of *A. santolina* and *A. mellifolium* oils caused 90.4 (72.5 %) and 73.8 (60.1 %) adult and larval mortality after 7days, respectively. Using

fumigation and 7days exposure, a concentration of 50.0 µl/l air of *A. biebersteinii* oil displayed the strongest activity (percentage adult and larval mortalities of 100.0 and 88.0 %), respectively, while *A. santolina* and *A. mellifolium* oils at the same concentration caused 92.5 (76.8 %) and 76.1 (61.3 %) adult and larval mortality, respectively. The three oils were strongly repellent to the larvae and adults of *T. granarium*. The repellent activity was time and concentration-dependent, where *A. biebersteinii* oil was the most effective, even though at low concentrations (percentage repellency of 100 and 81.0 % were recorded against adults and larvae after 6h exposure to a concentration of 0.22µl/cm^2, respectively). Results suggested the potential use of *Achillea* oils as natural grain protectants against *T. granarium*. [Gomah E. Nenaah (E.gypt). Journal of Pest Science, 87(2): 273-283, 2014].

IRAN

Identification of Fusarium species causing basal rot of onion in East Azerbaijan province, Iran and evaluation of their virulence on onion bulbs and seedlings. One of the economically important diseases of onion is the basal rot caused by various Fusarium species. Identification of the pathogenic species prevalent in a region is indispensable for designing management strategies, especially to develop resistant cultivars. Eighty Fusarium isolates are obtained from red onion bulbs on infected fields of East Azarbaijan province. Inoculating the onion bulbs with 38 selective isolates indicated that 17 isolates were pathogenic on onion. According to the morphological and molecular characteristics, these isolates were identified as *F. oxysporum*, *F. solani*, F. proliferatum and *F. redolens*. This is the first report of F. redolens on onion in Iran. On the other hand, the virulence of each pathogenic isolate was evaluated on onion bulbs and seedlings. *F. oxysporum* which causes severe rot and damping-off was considered as a highly virulent species in both conditions. While, *F. proliferatum* was considered as the most destructive on onion bulbs. Rot ability of *F. solani* was not considerable, and only the 4S isolate caused pre- and post-emergence damping-off more than 50%. Finally, F. redolens with less pathogenicity on onion bulbs was identified as the most virulent isolate on onion seedlings, which was explanatory of its importance on farm. [Bahareh Ghanbarzadeh, Ebrahim Mohammadi Goltapeh, Naser Safaie (Iran). Archives of Phytopathology and Plant Protection, 47(9): 1050-1062, 2014].

Improvement in biocontrol activity of *Bacillus subtilis*UTB1 against *Aspergillus flavus*using gamma-irradiation. *Bacillus subtilis*UTB1, a biocontrol bacterium isolated from Iranian pistachio nuts, has revealed to have antagonistic activity against aflatoxin-producing *Aspergillusflavus*R5. The strain UTB1 produces lipopeptide compounds and is able to degrade aflatoxin B1. In this study, a random mutagenesis generated using different doses of gamma irradiation (0.1–3 KGy) was applied on *B. subtilis* UTB1 to improve its antagonistic activity against *A. flavus* R5. Five hundred bacterial colonies were selected randomly after irradiation, and their effects against *A. flavus* R5 were assessed in a plate assay. Forty-five colonies (9%) exhibited higher inhibition activity as compared to the non-irradiated wild type. Eight colonies out of the 45 were selected based on different polymorphism patterns obtained by repetitive element sequence polymorphism-PCR (ERIC and BOX) analyses; six of which could significantly inhibit the fungal growth utilizing washed cells and cell-free supernatants as compared to the parental strain. According to thin-layer chromatograms, the production of lipopeptides including surfactin, fengycin and iturin families increased in these six mutants. A considerable inhibition of the fungal growth was observed using bioautography analysis, which associated with iturins production. *A. flavus* sporulation and aflatoxin content decreased significantly in pistachio nuts treated with mutants M419 and M464 as compared to the strain UTB1. These results suggest that both mutants M419 and M464 could be promising biocontrol candidates against *A. flavus*in pistachio nuts. [Hamideh Afsharmanesh, Masoud Ahmadzadeh, Mohammad Javan-Nikkhah, Keivan Behboudi. (Iran). Crop protection, 60: 83-92, 2014].

Screening of the susceptibility of newly released genotypes of potato to thrips infestation under field conditions in northwest Iran. Use of host plant resistance is an essential component of integrated management of *Thrips tabaci* Lindeman. The present research was designed to screen five commercial cultivars of potato, namely Agria, Kondor, Morene, Diamant and Savalan, and two breeding lines 397082-2 and Khavaran for their susceptibility to thrips infestation and for their mean relative plant growth rate (MRGR) and crop yield in an experimental field (not frected with insecticides) and a control field (chlorpyrifos frected) in the Ardabil region of Iran in 2011 and 2012. Thrips populations were assessed by visual inspection on potato leaves. At harvest time, the percentage of leaf area damaged by thrips infestation was assessed on leaves of the tested genotypes. All adults of phytophagous thrips collected in the experimental field were *T. tabaci*. In both years the mean numbers of thrips adults and larvae were lowest on Savalan cultivar among the tested genotypes. The mean damage index was also lowest on Savalan in both years and the MRGR and the mean yield were greatest in Savalan in the control field. Moreover, in thrips-infested plants, the lowest percentage of MRGR loss and the lowest percentage of yield reduction were observed in Savalan (3.7% and 5.8%, respectively). Of the genotypes tested, Savalan was the most resistant host and has potential for use in the sustainable management of *T. tabaci* on potato. [Seyed Ali Asghar Fathi (Iran). Crop Protection, 62: 79-85, 2014].

Phaeoacremonium and Botryosphaeriaceae species associated with cypress (*Cupressus sempervirens* L.) decline in Kerman province (Iran). Common cypress (*Cupressus sempervirens* L.) is an east Mediterranean plant element and one of four native conifers in Iran. During spring and summer of 2012, a field survey was carried out in different areas of Kerman province (south-eastern Iran) to study cypress decline diseases. Samples were collected from crowns, trunks and branches of cypress trees showing yellowing, dieback, canker, wilting of leaves and internal wood discoloration. Isolations were made from symptomatic wood tissues. Based on morphological and

molecular characteristics, four species of *Phaeoacremonium*, namely *Phaeoacremonium parasiticum*, *Pm. aleophilum*, *Pm. Iranianum* and *Pm. rubrigenum*, and two species of the Botryosphaeriaceae, *Botryosphaeria dothidea* and *Neofusicoccum parvum*, were isolated and identified. Pathogenicity tests were undertaken to determine the role of these species on 2-year-old potted cypress plants and green shoots of grapevine. *Neofusicoccum parvum* was more virulent than the other species and caused the largest lesions on both hosts. The fungi were re-isolated from margins of lesions and healthy tissue, thus completing Koch's postulates. This is the first report of *B. dothidea*, *N. parvum*, *Pm. aleophilum*, *Pm. rubrigenum*and *Pm. iranianum*as pathogens on Mediterranean cypress trees. [H. Mohammadi, S. Kazemi and H. Farhamand (Iran). Phytopathologia Mediterranea, 53(1): 27-39, 2014].

JORDAN

Disease management of organic tomato under greenhouse conditions in the Jordan Valley. Production of organic tomato under greenhouse conditions has significantly increased in the last few years. Although greenhouse systems provide the option of off-season production and expansion of markets over traditional outdoor field systems, such systems also pose unique challenges with regard to pest management. An experiment was conducted in the Jordan Valley during the fall of 2011/2012 to evaluate the effects of integrated pest management that combines different preventive and control measures, on diseases and pests of tomato grown under greenhouse conditions. The experiment consisted of three treatments (organic farming, conventional farming and integrated pest management (IPM) farming) with four replicates arranged in a randomized complete block design (RCBD). The plant diseases and pests were monitored in all treatments. Powdery mildew disease was recorded at 6 weeks after transplanting in all treatments and at 22 weeks after transplanting, the disease incidence was 74%, 68% and 57% in the IPM, conventional and organic treatments, respectively. However, the disease severity did not exceed 1.5 in any of the treatments. Early blight disease appeared at 16 weeks after transplanting and at 22 weeks after transplanting, the disease incidence was 62%, 54% and 47% in the IPM, conventional and organic treatments, respectively. Neither bacterial symptoms nor nematode symptoms were observed in any of the treatments. Enzyme-linked immunosorbent assay (ELISA) tests revealed the presence of *Tomato ring spot virus* (ToRSV) and *Tomato bushy stunt virus* (TBSV). Overall, the study showed that there were no significant differences between the three treatments with regard to tomato plant height, width, circumference, number of flowers/cluster, number of clusters/plant, fruit yield, shoot dry weight and root dry weight. Furthermore, several quality parameters of tomato fruits were studied; dry weight, lycopene content and pH were found to be significantly higher in the organic tomatoes. A. Mansour, L. Al-Banna, N. Salem, N. Alsmairat. (Jordan). Crop Protection, 60: 48-55, 2014)].

LEBANON

Modification of serological techniques and their evaluation for detection of potato viruses in seed certification related activities. Development of alternative serological techniques to ELISA for detection of potato viruses offers advantages for monitoring virus incidence and for seed potato certification systems. Several trials showed that multiplex tissue print immunoassay (TPIA) and dot blot immunoassay (DBIA) might represent fast, practical, and sensitive alternatives for the detection of: *Potato leaf roll virus* (PLRV), *Potato virus S*(PVS), *Potato virus X* (PVX) and *Potato virus Y*(PVY), from green and/or tuber tissues. In TPIA, the specific precipitation patterns in infected tissues of leaf petioles or stem cross sections, observed with each virus, allowed identification of the specific virus or mixed infections in a single multiplex assay. For detection of PVY in green tissues, DBIA was shown to be over 50 times more sensitive than ELISA. TPIA and ELISA from the tuber stem end or from eyes might be used for rapid detection of PVY and PVS in seed potato tubers without prior germination. PVS was evenly distributed in potato tuber tissue, while PVY was localized in the vascular tissue beneath the epidermis, with irregular distribution along the periphery of the potato tuber. For laboratories in developing countries lacking time and facilities for tests based on tuber germination, monitoring for PVS and PVY using TPIA in tuber tissue may be a suitable alternative to ELISA. [J. Samsatly, M. Jawhari, C. Najjar, H. Sobh and Y. Abou-Jawdah (Lebanon). Crop Protection, 61: 51-57, 2014].

Diet of the Barn Owl (*Tyto alba*) from Chaddra-Akkar, Northern Lebanon. Pellets, regurgitated by the Barn Owl, *Tyto alba*, were collected from Chadra-Akkar region in northern Lebanon. Pellets analyses yielded remains of 249 individuals, representing nine mammalian species and one species of a passerine bird. Small mammals constituted 96.4% of its diet (90.4% rodents and 6.0% insectivores), while birds constituted 3.6%. Günther's Vole, *Microtus guentheri*, and the House Mouse, *Mus domesticus/macedonicus*, were the most abundant prey items, representing 43.4% and 32.1% of the total number of recovered prey items respectively. The number of prey items per one pellet ranged from 1-6 individuals (Average 2.15 ±1.23 skull/pellet, N= 55). [M.R. Abi-Said, A. Shehab and Z.S. Amr (Lebanon). Jordan Journal of Biological Sciences, 7(2): 109–112, 2014].

OMAN

Clonal structure of *Ceratocystis manginecans* populations from mango wilt disease in Oman and Pakistan. *Ceratocystis manginecans* has recently been described from Oman and Pakistan where the fungus causes a serious wilt disease of mango. In both countries, the disease has moved rapidly throughout mango producing areas leading to the mortality of thousands of mango trees. The disease is associated with the infestation of the wood-boring beetle *Hypocryphalus mangiferae* that consistently carries *C. manginecans*. The aim of this study was to consider the population structure of *C. manginecans* isolated from Oman and Pakistan using microsatellite markers and amplified fragment length polymorphisms

(AFLPs). Population genetic analysis of *C. manginecans* isolates from diseased mango tissue and bark beetles associated with the disease in Oman and Pakistan, showed no genetic diversity. The apparently clonal nature of the population suggests strongly that *C. manginecans* was introduced into these countries as a single event or from another clonal source. [A. O. Al Adawi, I. Barnes, I. A. Khan, M. L. Deadman, B. D. Wingfield, M. J. Wingfield (Oman & Pakistan). Australasian Plant Pathology. 43(4): 393-402, 2014].

PAKISTAN

Breeding approaches for bacterial leaf blight resistance in rice (*Oryza sativa* L.): current status and future directions. Bacterial leaf blight (BLB) is one of the most serious threats to the rice crop in irrigated and rainfed areas of the world. It is caused by *Xanthomonas oryzae*p v. oryzae and has been known for more than a century. Through rigorous screening and selection, a number of resistant cultivars have been produced and utilized, but resistance was overcome by the development of mutant strains of pathogen and by the dynamic change in Xoo populations. About 38 resistance genes have been reported in rice against the disease and a few have been cloned. The pyramiding of several resistance genes through marker assisted selection has been a quite effective strategy for combating the disease. However, new powerful tools such as transgenics have been introduced to make a significant impact. The purpose of this mini-review is to consolidate the existing knowledge about bacterial leaf blight in rice and the progress made both in conventional as well as in molecular dimensions of breeding together with potential findings and constraints. [M. Alam Khan, M. Naeem and M. Iqbal. (Pakistan). European Journal of Plant Pathology, 139(1): 27-37, 2014].

Expression of defence genes in stolbur phytoplasma infected tomatoes, and effect of defence stimulators on disease development. In tomato, the stolbur disease caused by '*Candidatus Phytoplasma solani*' alters developmental processes resulting in malformations of both vegetative and reproductive organs, two stolbur phytoplasma strains PO and C induce mutually distinct symptoms. The aim of the present study was to determine the effect of stolbur phytoplasma-infection on the Salicylic (SA) and Jasmonic (JA) acids hormone signalling pathways and to assess whether pre-activation of these defence pathways could protect tomato against the stolbur disease development. Expression of SA- and JA-dependent marker genes was studied in tomato by qRT-PCR. Results indicated that the SA-mediated defence response was activated by the stolbur phytoplasma strains PO and C in contrast to the JA-dependent defence pathway which was repressed by strain PO but activated by strain C. The two stolbur strains, PO and C, generated different responses, suggesting that the two strains might have distinct virulence factors, in agreement with the fact that they induce distinctive symptoms. In stolbur PO-infected tomato, pre-activation of the JA-dependent defence pathway by methyl jasmonate (MeJA) before infection had no effect on the disease development whereas pre-activation of the SA-dependent defence pathway by treatment with benzothiadiazole (BTH) prior to graft-inoculation of the phytoplasma resulted in a minor delay in phytoplasma multiplication and symptom production. As grafting implicates a high inoculum as compared to insect inoculation, it would be of interest to test BTH treatment in natural conditions. [J.N. Ahmad, J. Renaudin, S. Eveillard. (France & Pakistan). European Journal of Plant Pathology, 139(1): 39-51, 2014].

SAUDI ARABIA

Morphometric characterisation of the native Honeybee, *Apis mellifera* Linnaeus, 1758, of Saudi Arabia. The morphometry of native honeybees from Saudi Arabia was analysed and compared with 7 *Apis mellifera* subspecies, based on 198 colony samples from 36 locations. Twenty five standard morphological characters were evaluated, and samples were compared with seven reference honeybee subspecies (*Apis mellifera carnica, A. m. ligustica, A. m. meda, A. m. syriaca, A. m. lamarckii, A. m. litorea* and *A. m. jemenitica*) obtained from the Oberursel Data Bank (Institut für Bienenkunde, Frankfurt University, Germany). Results confirmed that samples from Saudi Arabia are very similar to samples from the subspecies *A. m. jemenitica*, previously described from Oman, Yemen and Saudi Arabia. Samples were well-separated from the other subspecies, but the distinction was less in relation to *A. m. litorea*. While locally kept bees were well-separated, samples from migratory beekeeping showed broader variation and were less clearly separated, indicating the influence of ingression and hybridization with introduced honeybee subspecies. [Y. Alattal, A. Al Ghamdi and M. Al Sharhi (Saudia Arabia). Zoology in the Middle East, 60(3): 226-235, 2014].

TUNISIA

Fungicide sensitivity of *Mycosphaerella graminicola* Tunisian isolates: the importance of drug transporter genes in the process of fungicide tolerance. Seventeen *Mycosphaerella graminicola* isolates from Tunisia and two reference isolates from Europe (St-Q7-2 and IPO323) were examined for sensitivity to azoxystrobin and tebuconazole and for the importance of the drug transporter genes MgAtr3 (ABC transporter), MgMfs1 (MFS transporter), MgSlt2 (MAP Kinase), MgGpa1 and MgGpb1 (cyclic AMP) in the process of fungicide tolerance. All Tunisian isolates were sensitive to both fungicides, but considerable variability in sensitivity, and evidence for slight multidrug resistance toward both fungicides (r = 0.58), were observed. A gene expression assay revealed that MgAtr3 and MgMfs1 are involved in tolerance to both fungicides. MgAtr3 is likely involved in tolerance to tebuconazole, while MgMfs1 is likely required for tolerance to azoxystrobin. The other genes examined were found more likely to be pathogenicity factors rather than fungicide tolerance factors, except for MgSlt2 which was weakly induced by azoxystrobin treatment. This study has indicated that the Tunisian population of M. graminicola remains more sensitive to strobilurin and azole fungicides than European populations, and reports the importance of the ABC and MFS transporters MgAtr3and MgMfs1 in the mechanism of

fungicide tolerance. [L. Somai-Jemali, S. Selim, A. Siah and W. Hamamda (Tunisia). Phytopathologica Medditerania, 53(1): 83-93, 2014].

❖Some Plant Protection Activities of FAO and Other Organizations

DESERT LOCUST SITUATION

Situation level: Caution

General Situation of the Desert Locust during June 2014 and Forecast until mid-August 2014 provided by the FAO Emergency Centre for Desert Locust (ECLO).

The Desert Locust situation remained calm during June. Control operations continued against infestations in the spring breeding areas of Saudi Arabia and Iran. A few swarms appeared in northern Yemen and northern Ethiopia. Limited control was carried out in Algeria, Ethiopia, Oman and Sudan. During the forecast period, small-scale breeding will commence in the summer breeding areas of the northern Sahel in West Africa and Sudan and along the Indo-Pakistan border with the onset of the seasonal rains. Consequently, locust numbers will increase slightly but remain below threatening levels.

Western Region. The situation remained calm during June. A few groups of mature adults were present and laying eggs in irrigated areas in the central Sahara of Algeria and 22 ha were treated. Elsewhere, dry conditions prevailed, and no surveys were carried out and no locusts were reported. During the forecast period, low numbers of adults are expected to appear in southeast and central Mauritania, northern Mali, in the Tamesna and Air Mountains of northern Niger, and in central and eastern Chad. Small-scale breeding will occur in those areas that receive rainfall.

Central Region. The situation remained generally calm during June except in Saudi Arabia where spring breeding continued in the interior, giving rise to additional hopper groups and bands, and adult groups. Groups of mature adults moved south while a few immature swarms arrived in northern Yemen and dispersed in the interior and central highlands. Aerial and ground control operations treated 17,800 ha in Saudi Arabia. A few swarms were seen on the plateau in northern Somalia in early June and small swarms moved to northern Ethiopia and adjacent highland areas in Eritrea. Aircraft treated nearly 1,200 ha in northern Ethiopia. Control operations concluded in Oman and only scattered adults remained. In northern Sudan, adults formed a few groups in the Nile Valley that were treated. During the forecast period, low numbers of adults are expected to appear in the interior of Sudan, western Eritrea and perhaps Yemen, and breed on a small scale, causing locust numbers to increase slightly. This could be supplemented by a few small swarms arriving from Ethiopia and Saudi Arabia.

Eastern Region. Groups of hoppers and adults formed in the spring breeding areas of southeastern Iran, and 18,000 ha were treated during the first half of June. Thereafter, the situation improved. No locusts were reported elsewhere in the region. During the forecast period, low numbers of adults are expected to appear on both sides of the Indo-Pakistan border where small-scale breeding will occur with the arrival of the southwest monsoon rains, causing locust numbers to increase slightly.

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

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

REGIONAL WORKSHOP ON MAINTENANCE OF DESERT LOCUST SPRAYERS FROM 1 TO 5 JUNE, 2014.

The Commission for Controlling the Desert Locust in the Central Region (CRC) organizes and conducted regional workshop on maintenance of Desert Locust sprayers from 1 to 5 June, 2014. 12 sprayer's technicians from 6 member countries of Central Region Commission participated in the Workshop.

❖Short plant protection notes

* "Rising levels of CO_2 are affecting human nutrition by reducing levels of very important nutrients in very important food crops," said Prof Samuel Myers, an environmental health expert at Harvard University, Boston, and lead author of the study. "From a health viewpoint, iron and zinc are hugely important."

* A University of Florida scientist has pinpointed Mexico as the origin of the pathogen that caused the 1840s Irish Potato Famine, a finding that may help researchers solve the $6 billion-a-year disease that continues to evolve and torment potato and tomato growers around the world.
Click here to read more about the finding at the website of the University of Florida, ufl.edu
Publication date: 6/6/2014

❖GENERAL NEWS

CALL FOR ABSTRACTS 18TH INTERNATIONAL PLANT PROTECTION CONGRESS,24–27 AUGUST 2015 • BERLIN, GERMANY HTTP://WWW.IPPC2015.DE

The International Association for the Plant Protection Sciences (IAPPS) and Germanlocal organizations responsible for organizing this International Plant Protection Congress series, invite you to attend and contribute to this 18th international and multi-disciplinary congress on all aspects of plant protection in the exciting city of Berlin.
The program of activities being developed jointly by the three German organizations (DPG, JKI and IVA) together with IAPPS is aimed to address many of the key issues faced by farmers, governments and plant protection scientists in meeting the challenge of designing and implementing appropriate and sustainable plant protection measures.
Online submission of Abstracts via www.ippc2015.de• **Deadline: 1 February 2015**.

TRAINING COURSE: "TOXIGENIC FUNGI AND PATHOGENIC BACTERIA IN FOOD CHAIN"

This is a training course to be held in Bari, Italy, revised to 27 - 31 October 2014. Giancario Perrone, Institute of Sciences of Food Production, National Research Council, via Amendola 122/0, 70126, Bari, Italy. The places are limited in numbers. Please note the last minute change of the dates.
Contact: Dr. Antonio Moretti - Tel: +39 080 5929326, e-mail: antonio.moretti@ispa.cnr.it

INTERNATIONAL PLANT RESISTANCE TO INSECTS WORKSHOP 14-16 APRIL, 2014, MARRAKECH, MOROCCO

Insect pests are among the most limiting constraints to crop production, inflicting losses of billions of dollars worldwide. Pesticides are routinely used to reduce the damaging impacts of pests, but they are not sustainable as they pose risks to human, animals and to the wild life in general. Host plant resistance (HPR) has been the most economical and environmentally friendly means of controlling pests.

In view of the importance of the use of genetic resistance for the control of insect pests, the International Center for Agricultural Research in the Dry Areas (ICARDA), the National Institute of Agricultural Research (INRA), Morocco, the Moroccan Association of Plant Protection (AMPP) and the International Plant Resistance to Insects Working Group successfully organized the 21st Biennial International Plant Resistance to Insects Workshop in Marrakech, Morocco 14-16 April, 2014. This workshop, held under the auspices of the Ministry of Agriculture and Marine Fisheries, was opened by H.E. the Secretary General of the Ministry, Prof. Mohamed Sadiki.

This meeting reviewed the progress and recent advances in the area of host plant resistance to insect pests, and developed international collegiality among HPR researchers. The areas covered during the workshop were:

- Screening methodologies for resistance to insect pests and sources of resistance
- Breeding for resistance to insect pests through conventional and molecular strategies
- Mechanisms of resistance to insect pests

165 participants from some 36 countries representing the five continents (Asia, Africa, Europe, America, and Australia) attended this workshop. Over the last 20 workshops held in the USA, The International Working Group on Resistance to Insects recognized scientists who

have made significant contribution to host plant resistance to insects. In the 21st IPRI workshop, the HPR award of merit was given to the team which has been engaged on research in the area of host plant resistance to Hessian fly in Morocco since early 1980's and has made significant achievements: several Hessian fly resistant varieties have been released in Morocco and a lot of sources of resistance identified in the cultivated wheat and its wild relatives. The scientists who have made significant contributions to Hessian fly resistance work in Morocco and have been recognized at the IPRI 2014 in Marrakech are:

From the National Institute of Agronomic Research (INRA): Dr. Nsarellah Nasserlhaq, Dr. Jlibene Mohamed, Dr. Lhaloui Saadia, Dr. El Hadoury Jamal, Mr. Amamou Ali, Mr. El Haila Mohamed

From the International Center for Agricultural Research in the Dry Areas (ICARDA): Dr. Amri Ahmed, Dr. Nachit Miloudi, Dr. Abdalla Osman, Dr. El Bouhssini Mustapha.

From the Mid America International Agricultural Consortium (MIAC)/USAID project: Dr. Jimmy Hatchet (USDA-ARS, Manhattan, KS).

For more information about the 21st IPRI workshop in Marrakech, please contact: Dr. Mustapha El Bouhssini (senior entomologist, ICARDA Rabat Office; m.bohssini@cgiar.org).

❖ Arab Society for Plant Protection News

Eleventh Arab Congress of Plant Protection

Under the patronage of his Royal Highness Prince Hasan Bin Talal, the Arab Society of Plant Protection in collaboration with Balqaa Applied University will hold the 11th Arab Congress of Plant protection in Amman, Jordan during the period 9-13 November, 2014. This congress is an important platform for Arab plant protection scientists to present their research findings and exchange ideas with colleagues from other Arab countries and scientists from other regions of the world. More detailed information about the congress can be obtained from the congress website (http://acpp.bau.edu.jo). So far, 750 colleagues from 19 Arab and eight foreign countries expressed interest in attending the congress. This strong interest reflects the good efforts made by the Organizing Committee in developing an interesting scientific program, in addition to the successes of previous congresses. The congress program covers all disciplines under plant protection such as economic entomology, fungal, viral, bacterial and nematode diseases, rodents, biological and integrated pest management, mites and weeds.

The scientific program of the congress includes six specialized symposia, with participation of experienced scientists from all over the world, oral research presentation sessions, poster sessions and a one day field trip.

The Organizing Committee looks forward to welcome all participants in Amman, Jordan. For more information contact Dr. Hazem Hassan, Secretary of the Organizing Committee, Balqaa Applied University (acpp@bau.edu.jo).

Scholarships for Best Practices submitted in the frame of EXPO Milano 2015 Internationalcompetition on "Best Sustainable Development Practices on Food Security"

Next year, Italy will host the **Universal Exhibition EXPO 2015**, whose claim is: "**Feeding the Planet, Energy for Life**". A strategic initiative of Expo Milano 2015 is the Programme "**Feeding Knowledge**", developed jointly by CIHEAM-IAMB and Politecnico of Milan.

In this context, a call has been launched for the recognition and promotion of Best Practices represented by **policies, technologies, know-how, services and products** related to Food Security.

Selected Best Practices will be awarded with dedicated events, promotional material, a documentary and visibility by 30 million visitors during the **Universal Exhibition in 2015**. Besides, all the Best Practices will be displayed on the Feeding Knowledge Platform to have maximum visibility and to be shared worldwide.

We are happy to inform you that the 11th Arab Congress on Plant Protection will award two Best Practices submitted by ACPP Participants with a 500 Euros scholarship each. Winners will be announced during the Congress.

Therefore, if you have recently developed projects or activities that you believe would be suitable to become Best Practices for Food Security, **APPLY TODAY** at this link: https://www.feedingknowledge.net/best-practices, where you will find detailed information on the application process and on-line support.

The deadline for the Proposals submission is: September 15th, 2014

We are ready to help you with all needed assistance to finalise your candidature, and for this reason you can contact: Dr. Thaer Yaseen (y.thaer@iamb.it), CIHEAM-IAMB Senior Researcher.

For further information:
www.feedingknowledge.net
www.facebook.com/Feedingknowledge
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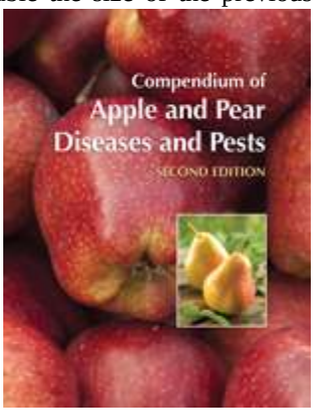
❖Publications

NEW BOOKS

Compendium of Apple and Pear Diseases and Pests, Second Edition (2014)

Edited by Turner B. Sutton, Herb S. Aldwinckle, Arthur M. Agnello, and James F. Walgenbach



Compendium of Apple and Pear Diseases and Pests, Second Edition, is nearly double the size of the previous edition, it boasts a total of 343 color images and more figures than any other compendium to date, offering second-to-none diagnostic coverage of these two important crops.

Of the many changes in this second edition, the most notable may be the addition of a new section that includes coverage of insects and mites, also known as arthropods. This section alone features 90 species and 160 color images which make this handbook a cross-disciplinary reference and scouting guide that will be utilized by extension professionals and the growers they serve for years to come.

All the original disease chapters of the first edition published in 1990 have been revised, many extensively, and 11 new chapters have been added. All chapters include the latest information on the distribution, biology, identification, and management of the many diseases and arthropod pests that occur worldwide.

This colorful guidebook is essential for ensuring early detection of disease and insect symptoms in order to implement control measures to maximum yields and product quality. It is an invaluable resource for anyone involved in healthy apple and pear production, including plant pathologists, entomologists, pomologists, extension agents, master gardeners, horticulturists, IPM practitioners, pesticide applicators, agrochemical professionals, private consultants, and growers.

THE BOOK IS EASY TO USE. IT ALLOWS USERS TO MATCH THE SYMPTOMS AND PESTS ON THEIR PLANTS WITH THE BOOK'S COLOR PHOTOGRAPHS. USERS CAN THEN REFER TO THE CORRESPONDING TEXT WHICH DESCRIBES THE RELATED SYMPTOMS, CAUSES, CYCLES, AND CONTROL PRACTICES FOR THE PARTICULAR DISEASE, INSECT, OR MITE. THE AUTHORS ALSO DESCRIBE NUTRITIONAL AND POSTHARVEST DISORDERS OF APPLES AND PEARS AND PROVIDE RECOMMENDATIONS TO MINIMIZE OR IMPROVE THESE ISSUES.

Collectively the authors of this comprehensive work represent 12 countries and the editors have over 120 years' experience in studying the biology and management of diseases and arthropod pests of apples and pears.

©2014; 8.5" × 11" soft cover; 224 pages; 343 color images; 3 black and white images; 3 pounds; ISBN 978-0-89054-430-3. Price 99 US $.

SELECTED RESEARCH PAPERS

Acarology

Gamma irradiation used on adult *Tetranychus urticae* Koch as a quarantine treatment. Osouli S., Nejad K.H.I., Ziaie F., Moghaddam M. Journal of Plant Protection Research, 54(2): 150-155,2014.

Entomology

Chemical composition and fumigant toxicity of *Artemisia absinthium* essential oil against *Rhyzopertha dominica* and *Spodoptera littoralis.* (Tunisia).*N. Dhen, O. Majdoub, S. Souguir, W. Tayeb, A. Laarif and I. Chaieb*. Tunisian Journal of Plant Protection, 9(1): 57-65, 2014.

Chemical composition of *Ruta chalepensis* essential oils and their insecticidal activity against *Tribolium castaneum.* (Tunisia).*O. Majdoub, N. Dhen, S. Souguir, D. Haouas, M. Baouandi, A. Laarif, and I. Chaieb*. Tunisian Journal of Plant Protection, 9(1): 83-90, 2014.

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- **Impact of temperature on some biological aspects of the diamond back moth, *Plutella xylostella* (L.) under laboratory conditions.** J.A. Ibrahim, A.N. Bashir and L.A. Aslan (Syria) (Pages 1-7).
- **Effect of temperature on some biological parameters of the cigarette beetle, *Lasioderma serricorne* (F) in the laboratory.** A. Basheer, H. Bilal and A. Saleh (Syria) (Pages 8-15).
- **Detection of some genetic diversity between populations of *Bemisia tabaci* Genn.occurred on tomato and eggplant grown in greenhouses and fields of Syrian coast.** A.M. Mouhanna and H.S. Barhoum (Syria) (Pages 16-24).

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- **Primary survey of orchid mycorrhizal fungi prevalent in some Syrian provinces**. Y. Kamari, M. Kardosh, A.R. Kalhout and M. Khatib (Syria) (Pages 35-42).

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- **The efficacy of the organic insecticide Fytoclean 40SL against the nymphs and adults of Dubas bug *Ommatissus lybicus* De berg.** B.H. Hassan, I.J. Al jboory, H.F. Alrubeai, A.H. Selman and M.Z. Khalaf (Iraq) (Pages 52-56).
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- **Effect of antagonistic microorganisms on gray mold caused by *Botrytis cinerea* on tomato and strawberry under laboratory and greenhouse conditions.** O. Hammoudi (Syria) (Pages 64-71).
- **The efficacy of some fungal isolates of *Beauveria* bassiana (Balsamo) Vuillemin on the biology of the red palm weevil, Rhynchophorus ferruginus Olivier along the Syrian coast.** Z. Kadour, M. El-Bouhssini, A.N. Trissi, M.K. Nahal and A. Masri (Syria) (Pages 72-78).

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- **Characterization of Some Syrian isolates of *Potato Virus Y*.** W. Mobayed, S.G. Kumari, S. Ra'ai and N. Attar (Syria) (Pages 79-87).

RESISTANCE

- **Effect of salicylic acid induced systemic acquired resistance in tobacco against *Potato virus Y*.** M. Khaddam, M. Yassin and S.Y. Ra'ai (Syria) (Pages 88-91).

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- **First record of the invasive mite *Tetranychus evansi* (Acari: Tetranychidae) in Syria.** G. Zriki, I. Saker and A. Boubou (Syria) (Pages 96-101).

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- **Evaluation of susceptibility of some Syrian cotton cultivars to Verticillium wilt disease infection caused by *Verticillium dahlia.*** M. Al-Masri, R. Albaka, K. Al-Assas and T. Abou Al Fadil.
- **Prevalence of olive peacock's eyespot (*Spilocaea oleagina*) and evaluation of its damages in different climatological regions of Syria.** A. Khafteh.
- **New method to screen *Fusarium oxysporum* f. sp. *lentis* isolates for pathogenicity.** N.H. Hussien, B. Bayaa, S. Ahmed., M. Baum and M.M. Yabraq.
- **Relationship between fig tree trunk diameter and infestation with the stem borer *Batocera rufomaculata.*** Y.A. Ali, A. Ahmad and J. Ammar.
- **The effect of temperature on the development of the brown soft scale, C*occus hesperidum* L. under laboratory conditions.** E. Mohamed, A.M. Basher and N. Abo Kaf.
- **Some biological characteristics of the parasitoid *Aphytis melinus* Debach, reared on the oleander scale insect, *Aspidio tusnerii* Bouche.** A.N. Basheer, L. Aslan, A. Al-Refa'a, A. Abou Al-Sel, A. Saleh and F. Abdul Razaq.
- **Monitoring some Tephritidae insects that affect fruit trees and their host range in Abugubeiha region, South Kordofan State, Sudan.** S.A.I. Ali, S.A. Mohamed and M.A. Al Fadel.
- **The effect of single and mixed infections of *Potato virus Y* and *Cucumber mosaic virus* on yield components of tomato plants.** R.M. Chami and I.D. Ismail.

- **Calculation of the sensitivity of the insects Depending on its insecticide- resistance.** A.R.Y.Al-Jubury.
- **Sugar constituents of flowers nectar of some cultivated medicinal plants and compared with honey in its effect on longevity and fertility of sunn pest egg parasitoid *Trissolcus grandis* Thomson.** W. Dawalibi, M. El Bouhssini, N. Kaaka, S. Khoja.
- **Effect of pea and bean seed powders on the population density and damage caused by khapra beetle Trogoderma granarium Everts.** Z.I.D. Bashi, R.A. Al-Iraqi and M.H. Janker.
- **Studies on the soft citrus scale insect, *Coccus pseudomagnoliarum* (Kuwana) on citrus trees along the Syrian coast and efficacy of its associated predators**. R. Aboud, M. Mofleh, J. Habaq, F. Al-Quem and M. Ahmed.
- **Population changes and control of *Tuta absuluta* Meyrick along the Syrian coast.** M. Mofleh, H. Habaq, F. Al-Quem, R. Aboud, O. Hammodi, L. Adra and M. Ahmed.
- **The effect of prey density of *Aphis fabae* on some biological characteristics of the predator *Coccinella undecimpmctata* adults.** N.A. Aljamali, A.K. Al-Jboory and A.N. Al-Zubidi.

EVENTS OF INTEREST

2014

* **03-06 November**
  The 5th Asian Conference on Plant Pathology. Chiang Mai, Thailand. See: http://www.acppthailand2014.com/welcome.php
* **9-13 November**
  11th Arab Congress of Plant Protection. Al-Salt, Jordan. Contact: Dr. Hazem Hasan, Secretary of the Organizing Committee acpp@bau.edu.jo, see: http://acpp.bau.edu.jo
* **18-20 November**
  9th International Workshop on Grapevine Trunk Diseases in Adelaide, Australia. see: http://www.plevin.com.au/iwgtd2014/index.html
* **31 October-03 November 2014**
  Fifth International Meeting on Emerging Diseases and Surveillance in Vienna, Austria. See: http://www.isid.org/imed/planned_topics.shtml

2015

* **23-26 March 2015**
  The **8th International Integrated Pest Management Symposium.** Salt Lake City, Utah, USA. Contact Elaine Wolff at 217-333-2880 or ipmsymposium@ad.uiuc.edu. See: http://www.ipmcenters.org/ipmsymposium12/
* **24–27 August 2015**
  XVIII**IPPC (International Plant Protection Congress) in Berlin, Germany.** See: http://www.ippc2015.de
* **30 August – 03 September 2015**
  5th Conference of the International Working Group on Legume and Vegetable Viruses (IWGLVV). Haarlem, the Netherlands**.** See: http://www.plant-virology.nl/IWGLVV2015

2016

* **25-30 September 2016**
  The XXV International Congress of Entomology in Orlando, Florida, USA. See: http://ice2016orlando.org/

2018

* **29 July – 03 August**
  11thInternational Congress of Plant Pathology (ICPP2018) in Boston, Massachusetts, USA. See: http://www.icpp2018.org/

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