Arab and Near East Plant Protection Newsletter

Number 63, December 2014

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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

Plant Protection beyond Food Security

In Brisbane, Australia on 19-20 June 2014, a meeting of the Agricultural Chief Scientists (MACS) of the G20 Group of Nations agreed that addressing the food security challenge was urgent, and encompassed several dimensions, including increasing food production, improving human health through diets and reducing waste and losses. They indicated that challenges should be addressed through systems approaches and increased collaboration between countries and international organisations in collaborative international research.

In the global context, an analysis by West and his co-workers (Science, 2014) has proposed 'key leverage points' that offer the best opportunities to improve global food security and environmental sustainability. They propose that a relatively small set of key actions (strategies to reduce irrigation, excess nitrogen and phosphorus, tropical deforestation and N_2O emissions) in six countries (i.e. China, India, Brazil, Pakistan, Indonesia and the United States) focused on 17 key crops could

- provide enough calories to meet the basic needs of three billion people,
- address many environmental impacts with global consequences, and
- focus on food waste reduction on the commodities with the greatest impact on global food security.

West and co-workers noted that around 30 to 50% of food was wasted, and that the six countries provided key leverage points where this problem could be tackled with most benefit. For example, using spatially explicit, crop specific data, they proposed that China used most global excess nitrogen (33%) and phosphorus (36%), and had the highest share of excess nitrous oxide emissions, India most excess use of irrigation in precipitation limited areas (36%) and Brazil most tropical deforestation (34%), and that strategies to reduce excesses of the four factors in the six countries could contribute significantly to improving global food security and environmental sustainability.

As plant protection specialists, we know that more effective management of pests, diseases and weeds is a key strategy to reduce crop losses and food waste, and that it is probably equally valid to suggest that improving plant protection measures in the six countries is an important global priority. Developing effective measures to do so would of course have important spill-over benefits to the agricultural systems in the rest of the world.

And while food security is a critical issue for the global development agenda, it is important to remember that plant protection goes far beyond this – it encompasses (i) land-care and the sustainability of natural landscapes and the environment, (ii) productivity and enjoyment of forests, fibre and recreational horticulture, (iii) minimizing plant pathogen impacts on human and animal health and, (iv) optimising and enhancing discovery and opportunities in biotechnology and plant molecular biology. And above all these important subjects – plant health management assures security for the source of life on the planet – the carbon capture and conversion of carbon dioxide to oxygen by plants that allowed the move from ocean-dwelling to land-dwelling life forms. In the 21st century plant health professionals have vital responsibilities. They are the guardians of plant health that is earth's wealth.

Greg JOHNSON
President, International Society for Plant Pathology

❖ Crop Protection News from Arab and Near East Countries

INVASIVE AND NEW PESTS

ALGERIA

First Report of *Fusarium equiseti* Causing Damping-Off Disease on Aleppo Pine in Algeria. The Aleppo pine (*Pinus halepensis* Mill.) is a conifer native to the Mediterranean region. In 2008 and 2009, a survey of Aleppo pine seedling diseases was performed in three forest nurseries from Relizane, Sidi Bel Abbes, and Tlemcen provinces in northwestern Algeria. Aleppo pine seedlings showed symptoms of pre- and post-emergence damping-off disease, with an incidence of 64 to 77%. Four composite samples were taken from each location. Disinfested root and root collar segments, approximately 5 mm in length, were cultured on potato dextrose agar (PDA) and incubated at 25°C, and hyphal tips were transferred to PDA. *Fusarium equiseti* (Corda) Sacc. (teleomorph: *Gibberella intricans* Wollenw.) was identified from roots of two seedlings from the Sidi Bel Abbes nursery. Morphological identification was done according to Fusarium keys. PDA colonies with abundant, loosely floccose, whitish aerial mycelium and beige pigmentation were observed. Macroconidia with usually 5 to 6 septa, 31 to 45 µm long. A pronounced dorsiventral curvature, tapered and elongated apical cell, and prominent foot shape were observed. Microconidia were absent. Chlamydospores were produced in hyphae, most often intercalary, solitary, in pairs, frequently forming chains or clusters, globose (7 to 13 µm). To confirm the identity of this fungus, the internal transcribed spacer of F3RS1 and F19RS1 isolates of *F. equiseti* were amplified and sequenced using ITS1 and ITS4 primers, GenBank accession nos. JX114784 and JX114791, respectively. Those sequences bore 100% (HQ671182) similarity with sequences of *F. equiseti* in GenBank. Pathogenicity tests were performed to fulfill Koch's postulates. Inoculum was produced by adding a 5-mm-diameter plug from a 7-day-old CMA petri dish culture to a previously sterilized 500 ml flask (237.5 g sand, 12.5 g cornmeal, 80 ml sterile distilled water), shaken over 9 days at 25°C, and mixed with sterile sandy clay soil at 1:3 (v:v). Infested soil was then transferred to 500 ml pots, and 10 Aleppo pine seeds were planted per pot. A completely randomized design was used with three replicates per isolate and three control pots with a similar non-infested soil. After 1 month at 25°C the two tested isolates caused typical damping-off symptoms (collar rot) on seedlings and were re-isolated from recently infected tissues. The percentages of the inoculated plants that became infected were 59 to 65% among isolates (0% in control pots). To our knowledge, infection by *F. equiseti* is a first report on Aleppo pine in northwestern Algeria, Northern Africa, and globally, and on conifers in the Mediterranean region. In Algeria, *F. equiseti* is associated with black pepper (*Piper nigrum* L.). These findings highlight the moderate impact of *F. equiseti* on the production of Aleppo seedling stock for reforestation activities in northwestern Algeria. [F. Lazreg, L. Belabid, J. Sanchez, E. Gallego, J.A. Garrido-Cardenas and A. Elhaitoum (Algeria & Spain). Plant disease, 98(9): 1268, 2014].

EGYPT

First Report of *Peronospora farinosa* f. sp. *spinaciae* Causing Downy Mildew on Spinach in Egypt. Downy mildew, caused by *Peronospora farinosa* 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].

MOROCCO

First Report of '*Candidatus* Liberibacter solanacearum' on Carrot in Africa. In March of 2014, carrot plants (*Daucus carota* L. var. Mascot) exhibiting symptoms of yellowing, purpling, and curling of leaves, proliferation of shoots, formation of hairy secondary roots, general stunting, and plant decline were observed in commercial fields in the Gharb region of Morocco. The symptoms resembled those caused by phytoplasmas, *Spiroplasma*

citri, or '*Candidatus* Liberibacter solanacearum' infection (1,2,3). About 30% of the plants in each field were symptomatic and plants were infested with unidentified psyllid nymphs; some psyllids are known vectors of '*Ca*. L. solanacearum.' A total of 10 symptomatic and 2 asymptomatic plants were collected from three fields. Total DNA was extracted from petiole and root tissues of each of the carrots, using the CTAB buffer extraction method (3). The DNA samples were tested for phytoplasmas and spiroplasmas by PCR (3) but neither pathogen was detected in the samples. The DNA extracts were tested for '*Ca*. L. solanacearum' by PCR using specific primer pairs OA2/OI2c, Lso adkF/R, and CL514F/R, to amplify a partial fragment of the 16S rDNA, the adenylate kinase gene, and*rpIJ*/*rpIL*50S rDNA ribosomal protein genes, respectively (1,2,5). DNA samples from all 10 symptomatic carrots yielded specific bands; 1,168 bp for the 16S rDNA fragment, 770 bp for the adk fragment, and 669 bp for rpIJ/rpIL, indicating the presence of 'Ca. L. solanacearum.' No '*Ca*. L. solanacearum' was detected in asymptomatic plants. DNA amplicons of three plant samples (one plant/field) for each primer pair were directly sequenced (Macrogen Inc., Amsterdam). Sequencing results identified two distinct products for the OA2/OI2c primer pair (GenBank Accession Nos. KJ740159 and KJ740160), and BLAST analysis of the 16S rDNA amplicons showed 99 and 100% identity to '*Ca.* L. solanacearum' (KF737346 and HQ454302, respectively). Two different sequences of the *adk* amplicon were obtained (KJ740162 and KJ740163), both of which were 98% identical to '*Ca*. L. solanacearum' (CP002371). Sequencing results also identified two distinct products for the CL514F/R primer pair (KJ754506 and KJ754507), and BLAST analysis of the 50S rDNA ribosomal protein showed 99 and 100% identity to '*Ca.* L. solanacearum' (KF357912 and HQ454321, respectively). The differences in our 16S and 50S rDNA sequences identified the presence of both '*Ca.* L. solanacearum' haplotypes D and E (4). To our knowledge, this is the first report of the occurrence of '*Ca*. L. solanacearum' in Morocco and Africa, suggesting a wider distribution of the bacterium in carrot crops in the Mediterranean region, including North Africa. '*Ca*. L. solanacearum' has caused economic damages to carrot and celery crops in the Canary Islands and mainland Spain, France, Sweden, Norway, and Finland (3). This bacterium has also caused millions of dollars in losses to potato and several other solanaceous crops in the United States, Mexico, Central America, and New Zealand (1,2,5). Given the economic impact of '*Ca*. L. solanacearum' on numerous important crops worldwide, it is imperative that preventive measures be taken to limit its spread. [R. Tahzima, M. Maes, E. H. Achbani, K. D. Swisher, J. E. Munyaneza, and K. De Jonghe. (Morocco). Plant Disease, 98(10): 1426, October 2014].

PAKISTAN

***Trichothecium roseum* Causes Fruit Rot of Tomato, Orange, and Apple in Pakistan.** During a field survey of greenhouses and fresh markets in 2013, fruits of tomato, oranges, and apples exhibited rot symptoms with white mycelial growth and salmon-color sporulation in the vicinity of Sargodha city (32°5′1″ N, 72°40′16″ E), Pakistan. Diseased fruit samples were collected in plastic bags and taken to laboratory on ice for further diagnosis. Diseased fruits were observed under a stereo microscope and single spores were removed using an inoculating needle. Isolation from single spores showed pink to white colonies on potato dextrose agar (PDA) containing hyaline, 2-celled, ellipsoid to pyriform conidia (17 to 24 × 7 to 11 µm) with slanting and truncate basal mark and produced in clusters. Conidiophores were branched (105 to 254 × 2 to 4 µm) and hyphae were hyaline (3 to 5 µm in diameter). These characteristics of the fungus were similar to *Trichothecium roseum* (Pers.) as reported by Inácio et al. Genomic DNA was extracted by using CTAB buffer from a single pure colony of one isolate of the fungus and PCR analysis was performed for ITS region and part of the 5′ end of the beta tubulin (TUB) gene. Single fragments of 550 bp and 1.5 kb length from ITS and TUB gene were amplified and sequenced (GenBank Accession Nos. KF975702 and KJ607590, respectively). Sequence analysis showed 99% similarity with *T. roseum* isolates from different regions of the world. Phylogenetic analysis (MEGA version 5.2 with WAG model) showed the close relatedness to the isolates of *T. roseum* from Pakistan and isolates from other parts of the world that revealed the low genetic variability of ITS region. TUB gene sequence analysis indicated 100% homology with isolates of *T. roseum* and to the other species in Hypocreales. Pathogenicity tests were performed on tomato cvs. Nova Mech and Rio Grande, orange cv. Kinnow, and on apple cv. Golden Delicious by inoculating five fruits from each cultivar. Spore suspensions (10^5 conidia/ml of sterilized distilled water) were inoculated into all wounded fruits (9 wounds/fruit) of each cultivar and incubated at 25°C for the development of symptoms. Five wounded fruits of each cultivar were inoculated with sterilized distilled water as a control treatment. The fruits were kept in plastic boxes and incubated in humid chambers for 5 days. The symptoms on apples were observed as brown rot with pinkish spores on rotted tissue. The cross section of apple fruits also showed the brown rotted tissues internally. The fungus developed mycelium and spores on the surface and caused severe rotting inside the tomato and citrus fruits. *T. roseum* was re-isolated by picking a single spore from rotted tissues of fruits under a stereo microscope, and culturing on PDA. The re-isolated fungus was confirmed morphologically and by molecular techniques. Tomato and apple has been reported as a host for *T. roseum* but oranges have not. To our knowledge, this is the first record of *T. roseum* infecting tomato, oranges, and apples in Pakistan. [M. I. Hamid, M. Hussain, M. U. Ghazanfar, M. Raza and X. Z. Liu (Pakistan & China). Plant disease, 98(9): 1271, 2014].

First Report of Rice Leaf Spot by *Alternaria gaisen* from Pakistan. A rice field owned by an individual grower in Lahore, Pakistan, was surveyed in July 2013. Plants with symptoms of black, circular, necrotic spots 3 to 4 mm in diameter and an average of 8 to 10 spots per leaf were

observed. Diseased plants were present in the field either singly or in groups of three to five. Ten symptomatic plants were selected randomly, and one infected leaf per plant and one necrotic spot per leaf was selected for the isolation of the pathogen. Necrotic areas were cut into small pieces, surface sterilized with 1% sodium hypochlorite solution, and plated on 2% malt extract agar (MEA) (Sigma, Dorset, UK). After incubation at 25 ± 2°C for 4 to 5 days, fungal mycelium was transferred aseptically to fresh MEA for pure culture. Three different isolates grown for 7 days on MEA were selected for detailed morphological studies. The fungal colony was dark greenish-black, reaching 7 to 8 cm in diameter, with 2 to 3 poorly defined growth rings. Conidiophores were geniculate and 50 to 140 × 3 to 4.5 µm in size. Conidia were in chains of 4 to 10, ovoid, ranging in size from 35 to 50 × 8 to 10 µm, with 12 to 15 transversal and 0 to 2 longitudinal septa. Conidia darkened from dull tan yellow to brown as the culture aged. Based on morphological characteristics, the pathogen was identified as *Alternaria gaisen* (2). A pure culture of the pathogen was deposited in First Fungal Culture Bank of Pakistan (FCBP1354). Due to the complexity of morphology-based identification of the genus *Alternaria*, sequencing of the internal transcribed spacer (ITS) region was carried out using the ITS1/ITS4 primer pair (1,3). The nucleotide sequence (KJ806190) of an amplified DNA fragment was compared with those already submitted to GenBank. The BLAST results revealed 99% identity of our *A. gaisen* isolate to strains NW680 (EU520123.1), FC3s (JX391937.1), and CBS 632.93 (KC584197.1), as well as some other*A. gaisen* strains. Pathogenicity testing of the fungus was performed on Basmati-198, a common cultivar of rice in Pakistan, by either spraying leaves of 1-month-old plants with 10 ml of spore suspension (2×10^5spores/ml) or mixing this spore suspension in soil at the time of sowing. Control plants were sprayed with sterilized water. Plants were kept in a glasshouse at 30 ± 2°C and monitored for disease development. After 15 days of incubation, similar leaf necrotic spots to those observed in the field, developed on all inoculated plants, whereas all control plants remained healthy and asympomatic. The experiment was repeated three times and similar results were obtained. Re-isolation of *A. gaisen* from the symptomatic leaves fulfilled Koch's pathogenicity postulate. Although limited to the field where it was observed, to our best of knowledge, this is the first report of rice leaf spot by *A. gaisen* from Pakistan. Also, rice has not been reported as the host of *A. gaisen* from any part of the world. This study indicates that *A. gaisen* is potentially an important pathogen of rice plants. Further investigations into epidemiology and disease management strategies for this new disease are warranted especially where rice crop is grown extensively. **[**N. Akhtar, R. Hafeez, and Z. A. Awan (Pakistan). Plant Disease, 98(10): 1440, October 2014].

TUNISIA

Morphological and molecular characterisation of *Pratylenchus oleae* n. sp. (Nematoda: Pratylenchidae) parasitizing wild and cultivated olives in Spain and Tunisia. A new mono-sexual root-lesion nematode species, **Pratylenchus oleae** n. sp., parasitizing roots of olive plants cv. Koroneiki in commercial fields at Ouled Chamekh (central Tunisia), and wild and cultivated olive (cv. Picual) plants in Agua Amarga (southern Spain) is described. The new species is characterised by the female having a lip region slightly offset and bearing three annuli, stylet 16.5 (14.5-17.0) µm long, with prominent rounded knobs, pharyngeal overlapping rather long (22–36) µm, lateral fields areolated and with four incisures and diagonal lines in middle band, spermatheca rounded but non-functional, tail short, conoid-rounded to subcylindrical, usually annulated terminus, males unknown, and a specific D2-D3, ITS1, 18S-rRNA, **hsp90** and **COI** sequences. Morphologically this species is related to *P. cruciferus*, *P. delattrei* and *P. kumamotoensis*. The results of the phylogenetic analysis based on sequences of the D2-D3 expansion regions of 28S, partial 18S and ITS rRNA genes confirmed the close relationship of *P. oleae* n. sp. with *P. dunensis*, *P. penetrans*, *P. pinguicaudatus*, from which was clearly separated. A PCR-based diagnostic assay was also developed for identification of ***P. oleae*** n. sp. using the species-specific primers Poleae_fw1_4 and Poleae_rv1 that amplify a 547-bp fragment in the internal transcribed spacer (ITS1) region of ribosomal DNA, which clearly separate from other root-lesion nematodes damaging olive such as P. penetrans and P. vulnus [Juan E. Palomares-Rius, Ilhem Guesmi, Najet Horrigue-Raouani, Carolina Cantalapiedra-Navarrete, Gracia Liébanas, Pablo Castillo (Spain & Tunisia). European Journal of Plant Pathology, 140(1): 53-67, September 2014].

QATAR

First Report of *Thielaviopsis punctulata* Causing Black Scorch Disease on Date Palm in Qatar. *Ceratocystis radicicola* (anamorph: *Thielaviopsis paradoxa*) was reported as an economically important pathogen causing serious diseases on date palm such as rhizosis and black scorch or as an associated pathogen with diseased date palm. In this study, we report for the first time that *C. radicicola* also causes black scorch disease in Qatar. In April to May 2013, we conducted a disease survey in 11 farms located in northern and southern Qatar where three infected farms had an average of 10% disease incidence. Infected trees manifested different disease symptoms such as black scorch of leaves, inflorescence blight, and heart and bud rot. Infected tissues were surface sterilized with 1.0% NaOCl for 60 s, rinsed with distilled water, blotted dry, and then plated on potato dextrose agar (PDA) supplemented with 50 mg/liter Rose Bengal. Single fungal colonies were picked from hyphal tips and grown on PDA for 7 days at 25°C for further examination of the mycological characteristics. Colonies of five *C. radicicola* isolates on PDA developed aerial mycelium with a light gray color in culture plate, which later changed to black. Both light and scanning electron microscopy were employed to delineate species by spore morphology. Colonies produced ovate aleuroconidia (14 to 17 × 9 to 12 µm) and cylindrical phialoconidia (7 to 9 × 3 to 4 µm)

characteristic features of *C. radicicola*. Phialoconidia (endoconidia) were hyaline to brown in chains produced from endoconidiophore, clamydospores (aleuroconidia), which were single with smooth or slightly rough wall. Additionally, *C. radicicola* produced single alueroconidia from conidiophores. Amplification of ITS rDNA region from fungal genomic DNA of five isolates, using universal primers ITS1 (5′-TCCGTAGGTGAACCTGCGG-3′) and ITS4 (5′-CCTCCGCTTATTGATATGC-3′) confirmed the isolated fungus as *C. radicicola* with no intra-specific variation among the fungal isolates. The length of ITS-rDNA sequence was 534 bp (KJ410228) and had 99 and 93% sequence identity with ITS-rDNA region from C. *radicicola* (HQ443203) and *C. paradoxa* (HC415073.1), respectively. A pathogenicity test was conducted using 3-year-old trees from three cultivars (Khalas, Khneezi, and Barhi) growing in sandy loam soil under greenhouse conditions (25 to 29°C and 12/12-h light/dark). Six trees from each cultivar were used for pathogenicity test, where three were inoculated and three other mock-inoculated. Eight millimeter diameter mycelial plugs were obtained from a *C. radicicola* culture on PDA medium and used to inoculate rachis region and basal petioles of date palm leaves with a 9-mm wound created with a cork borer. Control plants were mock-inoculated with PDA plugs. The inoculated area was covered with wet cotton to prevent dryness and the whole plant was covered for 72 h. Four days post infection (dpi), a rusty black infection appeared on the plants. Fifteen dpi, the whole leaf of inoculated stem showed typical symptoms, from which the fungus was re-isolated and colonies were maintained in PDA for morphological characterization, which were confirmed as *C. radicicola*. All trees from three cultivars showed symptoms with a variable severity from cultivar to another. To our knowledge, this is the first report of black scorch disease caused by *T. punctulata* in Qatar. This report highlighted the incidence of black scorch disease in Qatar demanding future research study to control the pathogen. **[**F. A. Al-Naemi, R. Nishad, T. A. Ahmed, and O. Radwan (Qatar). Plant Disease, 98(10): 1437, October 2014].

SUDAN

First Report of *Pepper vein yellows virus* Infecting Hot Pepper in Sudan. In two successive winters (2009 and 2010), 14 hot pepper (*Capsicum annuum*) samples showing unusual symptoms were surveyed in permanently irrigated seasonal vegetable gardens along the Blue Nile in central Sudan (specifically in Gezira State). Symptoms included leaf curling, leaf deformation, reduced leaf size, leaf puckering, interveinal yellowing, vein clearing, or yellow patches. Total RNA was extracted from symptomatic leaves and analyzed by reverse transcription (RT)-PCR with degenerate primer pairs that amplify different viral species within the family *Luteoviridae*. Amplification of a 340-bp fragment of the coat protein gene (CP) was obtained in all the collected samples analyzed. The amplified fragments were purified and sequenced (Accession Nos. KC685313 to 26), showing 99, 97, and 95 to 99% nucleotide identities to *Pepper yellows virus* (PYV, accession no. FN600344 from Turkey), *Pepper vein yellows virus* (PeVYV, AB594828 from Japan) and *Pepper yellow leaf curl virus* (PYLCV, HM439608 from Israel), respectively. These three viruses belong to the genus *Polerovirus* and are considered synonyms of the same virus species PeVYV described with those names in different countries. Two samples were also tested by RT-PCR with the general *Polerovirus* primer pair Pol-G-F and Pol-G-R, which amplified a 1.1-kb product spanning the 3′ half of the RNA-dependent RNA polymerase (RdRp) to the 5′ half of CP and movement protein. The amplified fragments (KC692834 and KC692833) showed 97, 96, and 95% nt identity with PYV (FN600344), PeVYV (JX427533), and PYLCV (HM439608), respectively. The presence of the recently described *Polerovirus* PeVYV is the first report of detection in pepper in Sudan. PeVYV has recently been identified in seven other countries (India, Indonesia, Mali, the Philippines, Spain, Taiwan, and Thailand) and on one new host, *Solanum nigrum*, which suggests this new *Polerovirus* species poses a potentially wide geographical distribution and a global threat for pepper crops. **[**A. Alfaro-Fernández, E. E. ElShafie, M. A. Ali, O. O. A. El Bashir, M. C. Córdoba-Sellés, and M. I. Font San Ambrosio (Sudan). Plant Disease, 98(10): 1446, October 2014].

TURKEY

First Report of *Campylocarpon fasciculare* Causing Black Foot Disease of Grapevine in Turkey. Soil-borne fungal diseases have become an important problem in grapevine nurseries of the Aegean region (western Turkey) in recent years. Reduced vigor, black vascular streaking in basal ends, blackish-sunken necrotic root lesions, and young vine death were observed in 15 grapevine nurseries of Manisa city in May 2011 and 2012. To determine the causal agents, symptomatic young grapevine (*Vitis vinifera* cv. Sultana 7) plants (grafted on 1103 Paulsen) were collected from nurseries (8 to 10 plants from each). Symptomatic basal end tissues were surface disinfested with 95% ethanol and flame sterilized. The internal tissues were plated onto potato dextrose agar amended with tetracycline (0.01%). *Campylocarpon*-like fungi were isolated (with 37.9% isolation frequency) from only one nursery (corresponding to 6.7% of all surveyed nurseries). Fungal colonies were incubated for 21 days in the dark to induce sporulation. Fungal colonies produced cottony aerial mycelium and turned chocolate-brown to dark brown on PDA. Abundant macroconidia were observed at branched conidiophores on long and cylindrical phialides. Microconidia were not observed. Macroconidia were generally 2 to 4 septate, cylindrical and slightly curved, with the following dimensions: 2 septate: 33.5 to 40.7 × 6.1 to 7.6 µm (mean: 35.9 × 6.8 µm), 3 septate: 36.2 to 43.4 × 6.6 to 8.3 µm (mean: 37.3 × 7.6 µm), and 4 septate: 48.9 to 53.5 × 7.6 to 8.3 µm (mean: 50.7 × 8.0 µm). Fifty macroconidia were measured. Morphologically, the isolates resembled the published description of *Campylocarpon fasciculare* Schroers, Halleen & Crous. For molecular identification, fungal DNA was extracted from mycelium

and ribosomal DNA fragments (ITS1, 5.8S ITS2 rDNA), β-tubulin, and histone H3 genes, amplified with ITS 4-5, Bt 2a-2b, and H3 1a-1b primers (3,5), and sequenced. Sequences were compared with those deposited in GenBank. The isolate (MBAi45CL) showed 99% similarity with *Campylocarpon fasciculare* isolates AY677303 (ITS), AY377225 (β-tubulin), and JF735502 (histone H3). The DNA sequences were deposited into GenBank under accessions KJ573392, KJ573393, and KJ573394 for ITS, β-tubulin, and Histone H3 genes, respectively. To fulfill Koch's postulates, pathogenicity tests were conducted under greenhouse conditions on own-rooted grapevines (*Vitis vinifera*) cv. Sultana 7. Plants were removed from the rooting bench and the roots were slightly trimmed and submerged in a 10^7 ml^{-1} conidial suspension of the isolate for 60 min. After inoculation, the rooted cuttings were planted in 1-liter bags containing a mixture of soil, peat, and sand (2:1:1, v/v/v), and maintained in the greenhouse (24°C. 16/8-h day/night, 75% RH). Ten plants were inoculated with the isolate and five plants were submerged in sterile distilled water (control). After 4 months, young vines were examined for vascular discoloration, reduced root biomass, blackish lesions, and recovery of fungal isolates. The experiment was repeated twice. Blackish-brown discoloration of xylem vessels and necrosis in the basal ends was visible in the inoculated plants but not in the control plants. The pathogen was successfully re-isolated from 69.1% of the inoculated plants. This report is important for the new studies aiming at black foot disease control in Turkey viticulture. [D. S. Akgül, N. G. Savaş and S. Önder, S. Özben and S. Kaymak (Turkey). Plant disease, 98(9): 1277, 2014].

First Report of Bacterial Blight of Pomegranate Caused by *Xanthomonas axonopodis* pv. *punicae* in Turkey. Pomegranate (*Punica granatum* L.) is an increasingly important fruit crop that is widely cultivated in Turkey. Typical bacterial blight symptoms were observed since spring of 2011 in pomegranate orchards located in Antalya Province. Symptoms were characterized by dark brown, angular to irregularly shaped spots on leaves and fruit; cankers on stems, branches, and trunks; and split trunks. The pathogen was isolated from leaf spots on naturally infected plants showing typical symptoms onto yeast dextrose chalk agar. Bright yellow bacterial colonies were consistently isolated. Bacterial strains were characterized as gram negative, oxidase negative, catalase positive, tobacco hypersensitivity positive, and able to produce acid from L-arabinose, D-galactose, D-glucose, and D-mannitol but not from D-xylose. Pathogenicity of the representative bacterial strain Serik-4 was performed on 2-year-old pomegranate plants cv. Hicaz. Leaves were sprayed until runoff with bacterial cell suspensions containing 10^7 CFU/ml. Inoculated plants were covered with transparent plastic bags to maintain moisture for 48 h. Negative control plants were inoculated with sterile distilled water. Plants were then incubated in a greenhouse at 30°C for 14 days. Symptoms on leaves included dark brown, angular to irregularly shaped water soaked lesions along the veins of the inoculated plants 10 days after inoculation. No lesions developed on the control plants. The symptoms on inoculated plants were similar to those on naturally infected plants. Yellow bacterial colonies were re-isolated from the inoculated plants and identified as the same as the original strain by conventional tests and FAME analysis, thus fulfilling Koch's postulates. Fatty acid methyl ester profiling of the representative strain Serik-4 using GC-MIDI (Microbial Identification Inc, Newark, DE) identified the genus of the bacterium as *Xanthomonas*. The identity of Serik-4 was further confirmed by amplifying the 16S rRNA gene with the universal primers 27F and 1492R (3) and sequence analysis (GenBank Accession No. KM007073). The 16S rRNA gene sequences of Serik-4 was 99% identical to the corresponding gene sequences of the *Xanthomonas axonopodis* pv. *punicae* strain present in the NCBI database (JQ067629.1). High incidence of bacterial blight caused by *X. axonopodis* pv. *punicae* on pomegranate has been previously reported in India (2), Pakistan (1), and South Africa (4). To our knowledge, this is the first report of bacterial blight on pomegranate caused by *X. axonopodis* pv. *punicae* in Turkey. [S. M. Icoz, I. Polat, G. Sulu, M. Yilmaz, A. Unlu, S. Soylu, I. A. Bozkurt, and Ö. Baysal (Turkey). Plant Disease, 98(10): 1427, October 2014].

First Report of Armillaria Root Rot Caused by *Armillaria mellea* Infecting Carrizo Citrange and Sour Orange Rootstocks in Turkey. Citrus rootstocks, Carrizo citrange (*Citrus sinensis* [L.] Osb. × *Poncirus trifoliata* [L.] Raf.) and sour orange (*C. aurantium* L.) grown in containers filled with 5 liters of potting mix of 40% peat and 60% volcanic tuff declined in a 0.2-ha commercial nursery in Adana, Turkey, between 2004 and 2007. Seedlings with symptoms of root rot were found with an average disease incidence of 20% among 1,000 Carrizo citrange seedlings and 10% among 15,000 sour orange seedlings. The potting mixture preparation unit was located next to an oak tree (*Quercus* sp.) showing symptoms of Armillaria root rot. Six- to 12-month-old seedlings of both rootstocks were stunted and the crowns were necrotic with the presence of white mycelium. Mycelial fans were observed beneath the bark of infected roots and they expanded into the crown. The root systems and nearby potting mix contained rhizomorphs. Thus, *Armillaria* spp. was suspected as a possible causal agent. Three diseased crowns and three rhizomorphs were surface-sterilized with 1% NaClO for 1 min and cultured on benomyl-dichloran-streptomycin containing selective medium (3) at 25°C in the dark for 1 week. Six isolates transferred to 1.5% malt extract agar at 33°C in the dark for 7 weeks consistently yielded abundant aerial hyphae and mean diameter growth range was 4 to 21 mm and the mycelium margin was regular (1). To confirm pathogen identity, total DNA was extracted using the Power Soil DNA Isolation Kit (MO BIO Laboratories, Inc., CA) directly from 7-day-old cultures grown in potato dextrose broth (PDB). The ribosomal DNA internal transcribed spacer (ITS) region was amplified by PCR using the primer pair ITS1 and ITS4 (5) and sequenced. The sequences were 99% identical to that of *Armillaria mellea* isolates from Japan (AB510880)

and China (KF032535). This confirmed the identity of the causal agent as *A. mellea* (Vahl.) P. Kumm. Ten 3-month-old seedlings of Carrizo citrange and sour orange were transplanted into steam-sterilized potting mix and inoculated with wood pieces of oak (*Quercus* sp.) colonized by the fungus (two pieces for each container) (2). The oak wood pieces were sterilized prior to the colonization by the pathogen. Plants were maintained in a greenhouse (23 to 25°C) until symptoms appeared. Ten non-inoculated seedlings from each rootstock served as controls and were maintained in the same environment. After 4 months, the crowns of the seedlings developed necrotic areas and root systems contained rhizomorphs on all inoculated seedlings and fungus was re-isolated from crowns and rhizomorphs. All control plants remained disease-free and no fungus was re-isolated. *A. mellea* was reported to infect citrus rootstocks in Spain in 1999 (4). To our knowledge, this is the first report of Armillaria root rot caused by *A. mellea* infecting Carrizo citrange and sour orange rootstocks in Turkey. This indicates that citrus rootstocks could be at risk for infection and sterilization of the potting mix and good sanitation practices in nurseries are very important. **[**F. Baysal-Gurel and A. Cinar (Turkey). Plant Disease, 98(10): 1439, October 2014].

RESEARCH HIGHLIGHTS

EGYPT

Chemical control of potato common scab disease under field conditions. The aim of this study was to evaluate certain fungicides against *Streptomyces scabies* (Thaxter), the main causal agent of common scab disease in potato and other crops, *in vitro* and *in vivo*. Fourteen isolates of *S. scabies* were isolated from naturally infected potato tubers showing common scab symptoms. All isolates were pathogenic to potato tubers and produced typical symptoms of common scab. Isolate (No. 11) caused highest disease index (DSI) followed by isolates 10, 8 and 5 (61.13%). Seven fungicides (Rizolex, Capitan, Moncut, Ridomil, Maxim, Topsin, and Oxyplus) were screened *in vitro* for their toxicity against the pathogen isolate (No. 11). Results showed that four of them (Rizolex, Capitan, Moncut, and Ridomil) exhibited inhibition zone ranging from 5.33 to 26.33 mm. Capitan, Ridomil, and Rizolex were able to reduce DSI under field condition but they varied in their effects. Capitan was the best fungicide which aids in the reduction of disease (33.8%) followed by Ridomil (31.5%) while Rizolex (21.2%) was the lowest one. [Mohamed Hosny, Kamal A.M. Abo-Elyousr, Mahmoud R. Asran & Farag A. Saead (Egypt). Archives of Phytopathology and Plant Protection, 47(18): 2193-2199, 2014].

Effects of carbon dioxide on *Sitotroga cerealella* (Olivier) larvae and their enzyme activity. The susceptibility of 4th instar larvae of *Sitotroga cerealella* to modified atmospheres (MAs) containing 25, 40 and 60% CO_2 in air at 27 °C with different exposure periods was determined. Also, changes in the activity level of several enzymes were analyzed. Reduction in percentage adult emergence from the treated larvae tended to increase with CO_2 concentration and with exposure period. The reduction in emergence of adult from the 4th instar larvae reached 100% after 264 h for 25% CO_2, after 240 h for 40% CO_2 and after 168 h for 60% CO_2. The larvae showed the highest rates of escape for 25% CO_2. This could be due to the fact that at higher CO_2 contents the narcotic effect overrode the repellent effect. Trehalase, acid phosphatase, acetylcholinesterase, phenoloxidase and lactate dehydrogenase (LDH) enzyme concentrations were found to be higher in the treated larvae. Larvae exposed to MAs exhibited decreasing activity of amylase, alkaline phosphatase and adenosine triphosphatase (ATP'ase) enzymes. Additionally, MAs led to an increase in the total protein, triglyceride and lactate content. [Mohamed Y. Hashem, Ismail I. Ismail, Adel F. Lutfallah, Soheir F. Abd El-Rahman (Egypt). Journal of Stored Products Research, 59: 17-23, October 2014].

Influence of eggs, juveniles and cysts as types of inocula on viability, infectivity and virulence of *Heteroderazeae* on corn in Egypt.The effect of different sources of inocula, i.e. eggs, juveniles and cysts on the development, reproduction and virulence of the corn cyst nematode, *Heteroderazeae* infected corn cv. Giza 2 under greenhouse conditions (30 ± 5 °C) revealed that the lowest final population and rate of build-up of the nematode were detected in those plants inoculated with juveniles; while the maximum values were obtained by eggs when used as initial inocula. Hence, the percentage of reduction in Giza 2 corn growth parameters were more pronounced in plants which had been inoculated with eggs as inocula comparing with those plants inoculated either by cysts or by juveniles. [Ahmed El-Sayed Ismail & Abbas Mohamed Kheir (Egypt). Archives of Phytopathology and Plant Protection, 47(18): 2276-2279, 2014].

Population dynamics of the citrus nematode, *Tylenchulus semipenetrans*, on navel orange as affected by some plant residues, an organic manure and a biocide. The population dynamics of the citrus nematode, *Tylenchulus semipenetrans*, on navel orange trees was studied from January 2012 to September 2012. The highest population of the citrus nematode appeared in May 2012 in the soil of navel orange trees, and the highest nematode population in roots appeared in August in the same year. Control of the citrus nematode by using smashed garlic cloves, powders of olive leaves and orange peels, an organic manure, chicken litter, either alone or in combination with a biocide, and sincocin compared to two nematicides, fenamiphos 10%G and oxamyl 24%L, was carried out in April 2012.The best results for controlling the citrus nematode were obtained four months after the addition of the tested materials in soil; the highest nematode percentages reduction obtained were 90.9%, for smashed garlic cloves, and 72.8%, for chicken litter. On roots, the best results were 92.3% for garlic cloves and 92.0% for oxamyl, one month after application. The concomitant treatments of sincocin plus garlic clove or sicocin plus

chicken litter were most effective in managing *T. semipenetrans* on navel orange trees after four and five months of application. [A.W. Amin & M.M.A. Youssef (Egypt). Archives of Phytopathology and Plant Protection, 47(18): 2233-2241, 2014].

Sub-lethal effects of spinetoram on the activities of some detoxifying enzymes in the black cutworm *Agrotis ipsilon* (Hufnagel) (Lepidoptera: Noctuidae). The present study was designed to investigate the activities of the detoxifying enzymes acetylcholinesterase (AChE), non-specific esterases (α- and β-esterases), glutathione S-transferase (GST) and mixed-function oxidases (MFO) in spinetoram-treated *Agrotis ipsilon* (Hufnagel). For this purpose, fourth larval instars were exposed to three sub-lethal concentrations (LC_{10}, LC_{20} and LC_{50}) of spinetoram for 24 h using the leaf dipping technique. The activities of detoxifying enzymes in the survivors after 2, 4 and 6 days of treatment were compared to non-treated larvae (control). AChE activity was significantly increased after 4 and 6 days of treatment with the LC_{10}. In contrast, this activity was significantly decreased after 2 days of treatment with the three sub-lethal concentrations applied, and after 4 and 6 days of treatment with the LC20 and LC_{50}. While both α- and β-esterase activities were significantly enhanced after 2 days of treatment with all the previous sub-lethal concentrations, with no constant pattern after 4 and 6 days of treatment. GST activity was significantly increased on the second day of treatment with the LC_{10}, and on the fourth day of treatment with the LC_{10} and LC_{50}. Whereas the only significant decrease in GST activity was observed on the sixth day of treatment with the LC_{10}. No significant change was recorded on the second and sixth days of treatment with the LC_{20} and L_{C50}, and on the fourth day of treatment with the LC_{20}. The activity of MFO was significantly enhanced up to the fourth day of treatment with all the concentrations investigated, whereas this activity was significantly decreased on the sixth day of treatment. Therefore, it appears that higher activities of detoxifying enzymes in *A. ipsilon*generally occurred in response to the intoxication by the lowest concentration of spinetoram, particularly after a relatively early time of treatment, and MFO may be considered the principal detoxifying enzymes. [N.M. Abd El-Aziz and E.H. Shaurub (Egypt). African Entomology, 22(1): 136-143, March, 2014].

The rice root nematode, *Hirschmanniella oryzae*, its identification, economic importance and control measures in Egypt: a review. *Hirschmanniella oryzae*, i.e. the rice root nematode (RRN), is among the major pests of rice and is the most common plant-parasitic nematode found on irrigated rice. In Egypt, *H. oryzae* and *H. gracilis* and other nematode genera were found in association with rice paddy fields. RRN is sexually dimorphic, i.e. sexes are separate and reproduction is amphimictic or bisexual; both sexes are required. The nematode infects and multiplies in the roots of the main host, rice cv. Giza 171, but not in those of cotton, maize, soybean, barley, wheat, Egyptian clover, alfalfa, horse bean and flax. However, the nematode penetrates and multiplies in the roots of several selected annual and perennial weeds. It has been found that RRN can penetrate anywhere along the roots of rice except at the tips or the thin lateral roots. The penetrated nematodes can either enter the root completely or simply embed their heads into the cortex. The rice root nematode makes tunnels after penetration into roots which are almost perpendicular to the root surface. An estimation of rice losses due to the rice root nematode was 25% and a total of 53,734 metric tons of rice grains with a net cash value of 10.7 million L.E. (107 million L.E. according to the present official price of rice ton in 2013) were the losses due to the rice root nematode infestation in Egypt. Control measures of the rice root nematode depend on: (1) varietal breeding for resistance, (2) application of nematicidal chemicals, (3) crop rotation, (4) fallow, (5) tillage and mechanical disturbance, (6) ammonia injection, (7) thermal control, (8) nutrition of rice by slow release rubber fertiliser formulation, (9) organic manure and (10) legislation. [M.M.A. Youssef & M.F.M. Eissa (Egypt). Archives of Phytopathology and Plant Protection, 47(19): 2340-2351, 2014].

IRAN

Integration of soil-applied herbicides at the reduced rates with physical control for weed management in fennel (*Foeniculum vulgare* Mill.). Fennel has been widely used in traditional medicine for their antimicrobial effects. Since fennel is long duration crop and have slow initial growth, it protection from weed is essential. Experiments were conducted for two consecutive seasons to evaluate the efficacy of soil-applied herbicides at the reduced rates in combination with physical control for weed management and optimizing the yield of fennel. Treatments were type of herbicide (trifluralin and pendimethalin), application dose (recommend dose (R), 75% R, 50% R, and 0% R) and physical weed control (none, one hand-weeding at 50 day after planting (DAP), wheat straw mulch). Weed-free control treatment was also included in each year. The results showed that the use of soil-applied herbicides resulted in reduced weed biomass but did not provide season long weed control without an additional physical control. In both seasons, pendimethalin provided better weeds control than trifluralin. Reduced herbicide rates were found to be more effective when herbicides application followed by hand-weeding than when were used alone or combined with mulch. Experimental results also showed that one time increasing in herbicide rates increased seed yield by 17.5 and 7.5% in 2012 and 16.5 and 6.3% in 2013, when one hand-weeding and mulching were used as supplemental control, respectively. Overall, the 75% of the labeled recommended rate of herbicides followed by one hand-weeding at 50 DAP produced consistently high yields and less weed biomass, reflecting both superior weed control and crop safety. [Ali Reza Yousefi and Mohammad Reza Rahimi (Iran). Crop Protection, 63: 107–112, 2014].

MOROCCO

QoI Resistance and Mitochondrial Genetic Structure of *Zymoseptoria tritici* in Morocco. In total, 230 single-conidial isolates of the fungal wheat pathogen *Zymoseptoria tritici* (formerly *Septoria tritici*, teleomorph: *Mycosphaerella graminicola*) were sampled in Morocco in 2008 and 2010 to assess resistance against quinone outside inhibitors (QoIs), a widely used group of fungicides in wheat pest management. All 134 isolates sampled in 2008 were QoI sensitive. In contrast, 9 of the 96 isolates from the 2010 collection were resistant, suggesting a recent emergence of the resistance. Mitochondrial (mt)DNA-sequence analyses identified four haplotypes among the resistant isolates. Wright's F statistics (F_{ST}) analyses from mtDNA sequences revealed a shallow population structure of *Z. tritici* within Morocco and a substantial asymmetric gene flow from Europe into Morocco. A phylogenetic reconstruction including Moroccan and European isolates clustered the haplotypes regardless of their geographic origin. The four Moroccan QoI-resistant mitochondrial haplotypes clustered in two distinct clades in the tree topology, suggesting at least two independent origins of the resistance. This study reported, for the first time, the occurrence of QoI-resistant genotypes of *Z. tritici* in Morocco. Our findings are consistent with the hypothesis that QoI resistance emerged very recently through parallel genetic adaptation in Morocco, although gene flow from Europe cannot be excluded. [A. Siah, A. Y. Elbekali, A. Ramdani, P. Reignault, S. F. F. Torriani, P. C. Brunner and P. Halama (France & Morocco). Plant disease, 98(8): 1138-1144, August, 2014].

OMAN

Occurrence of a new recombinant begomovirus species infecting tomato in the Al-Batinah region of Oman. Whitefly-transmitted begomoviruses are the most important limiting factor for tomato cultivation in Oman, particularly in the Al-Batinah region, the major agricultural area of the country. Commercial farms in the Al-Batinah region were surveyed during January–March 2013. Samples of tomato showing leaf curl disease symptoms typical of begomoviruses were collected and analysed. Full-length sequences of five clones were shown to have relatively low percentage identity values to known begomoviruses, with the highest (88·6%) to isolates of Tomato leaf curl Oman **virus** (ToLCOMV), a begomovirus previously reported in Oman, indicating that these represent a newly identified species, for which the name Tomato leaf curl Barka virus (ToLCBrV) is proposed. Four isolates of ToLCBrV were found associated with Tomato leaf curl betasatellite (ToLCB). The five isolates of ToLCBrV characterized in this study were shown to be recombinants, with ToLCOMV as the major parent, and a fragment of Croton yellow vein virus (CrYVV) spanning the 3′ half of the replication-associated protein. The significance of these findings is discussed. [A. A. M. Al-Shihi, A. J. Khan, S. Akhtar, A. T. M. Lima, F. M. Zerbini and R. W. Briddon (Oman). Plant Pathology, 63(5): 1177–1184, October 2014].

PAKISTAN

Powdery mildew of mango: A review of ecology, biology, epidemiology and management. Powdery mildew of mango, incited by the fungus Pseudoidium anacardii (F. Noack) U. Braun & R.T.A. Cook 2012 (formerly known as Oidium mangiferae Berthet), is one of the most common, widespread and serious diseases throughout the world and causes significant yield losses. Symptomatology, biology, and etiology of powdery mildew and its control through fungicides have not been widely studied, and substantial information is still required on the inoculum potential, growth models and epidemiological parameters of powdery mildew, influence of changing climate, impact of extensive use of fungicides and disease resistance. These critical factors may influence the development and emergence of diverse isolates of O. mangiferae including fungicide-resistant strains. Mango varieties differ slightly in their reaction to powdery mildew but a source of resistance has not been identified. In view of the increasing demands of mangoes in the world, control of powdery mildew is gaining importance. The present review treats briefly different aspects of powdery mildew disease with major emphasis on its ecology, pathology, epidemiology and management. Some new approaches such as biological control, integrated management strategies and some other aspects which have not been highlighted in former reviews, are also discussed. [Muhammad Nasir, Sardar Muhammad Mughal, Tariq Mukhtar and Muhammad Zaman Awan. (Pakistan). Crop Protection, 64: 19–26, October, 2014].

Stability, cross-resistance and fitness costs of resistance to emamectin benzoate in a re-selected field population of the beet armyworm, Spodoptera exigua (Lepidoptera: Noctuidae). *Spodoptera exigua* (Hübner) has a worldwide distribution with a high capacity for damaging a wide range of food, forage and fiber crops. It has been reported extensively from all over the world that populations of this pest species have developed field resistance against many insecticides. The objectives of this study were to determine whether an emamectin benzoate resistant field population of S. exigua re-selected with emamectin benzoate in the laboratory (Ema-SEL) showed cross-resistance to other insecticides, whether resistance was stable under laboratory conditions, and whether there were fitness costs associated with emamectin benzoate resistance. Bioassays at G_1 for the field population, gave resistance ratios (RRs) of 220, 149 and 38-fold for emamectin benzoate, spinosad and lufenuron, respectively, compared with a susceptible laboratory population (Lab-PK). Resistance ratios were increased by 526-fold and 6-fold compared with Lab-PK and the unselected field population (Ema-UNSEL, G_6), respectively after selection with emamectin benzoate (Ema-SEL) for five generations (G_6). Selection with emamectin benzoate had no apparent effect on susceptibility of Ema-SEL to spinosad and lufenuron, instead toxicity to the latter insecticides reduced, suggesting there was no cross-resistance between these compounds. Analysis of various life history traits suggested

that the Ema-SEL population had a lower overall fitness (0.38) compared with the Lab-PK (1.0). Lack of cross-resistance and the apparent instability of resistance to emamectin benzoate suggest that spinosad and lufenuron are suitable alternatives for use with emamectin benzoate in resistance management. In addition, the high relative fitness costs observed suggests that emamectin benzoate-resistant insects are at a considerable disadvantage to susceptible populations in the absence of selection pressure although this remains to be tested under field conditions. [M. Ishtiaq, M. Razaq, Mushtaq A. Saleem, Farida Anjum, M. Noor ul Ane, Abubakar M. Raza and Denis J. Wright. (Pakistan). Crop Protection, 65: 227–231, November, 2014].

Management of *Sitotroga cerealella* in stored cereal grains: a review. The economic loss due to pest attack in stored commodities is a serious problem worldwide. About 200 insect species attack stored commodities. These insect pests are responsible for quantitative and qualitative losses in cereal grains. Among the stored grain pests, Angoumois grain moth, *Sitotroga cerealella* is considered as common, top of the list and most destructive pest of cereal grains. Its infestation starts in the standing crop and continues in storage. Although there are many control strategies, our need is some effective, cheap and readily available strategy for safe storage. This review presents different ways by which *S. cerealella* can be controlled. In this paper, a list of approaches is given which are used to improve the protection of stored grains against *S. cerealella* attack. These approaches include use of edible oils, containers, synthetic chemicals, agricultural waste materials, plant derivatives, bacterial protoxins, biopesticides, biocontrol enhancers and semiochemicals. If these tactics are followed as combined strategies in a compatible manner, they can provide us an integrated pest management programme for the efficient control of *S. cerealella* in cereal grains. [S. Bushra & M. Aslam (Pakistan). Archives of Phytopathology and Plant Protection, 47(19): 2365-2376, 2014].

SYRIA

Genetic engineering of apple (Malus domestica Borkh.) for resistance to fungal diseases using g2ps1 gene from Gerbera hybrida (Asteraceae). In the present study, g2ps1 gene from Gerbera hybrida coding for 2-pyrone synthase which contribute for fungal and insect resistance was used. The aim was to work out an efficient approach of genetic transformation for apple cvs. 'Golden Delicious', 'Royal Gala' and 'MM111', 'M26' rootstocks for improving their fungal resistance using genetic engineering techniques. Adventitious shoot formation from leaf pieces of apples studied was achieved using middle leaf segments taken from the youngest leaves from in vitro-grown plants. Optimum conditions for ‚direct' shoot organogenesis resulted in high regeneration efficiency of 90%, 95%, 92% and 94% in the studied apples respectively. Putative transgenic shoots could be obtained on MS media with B5 Vitamins, 5.0 mg l-1 BAP, or 2.0 mg l-1 TDZ with 0.2 mg l-1 NAA in the presence of the selection agent "PPT" at 3.0-5.0 mgl-1. Shoot multiplication of transgenic shoots was achieved on: MS + B5 vitamins + 1.0 mg l-1 BAP + 0.3 mg l-1 IBA, 0.2 mg l-1 GA3+1.0 g/l MES+ 30 g/l sucrose + 7.0 g/l Agar, with the selection agent PPT at 5.0 mg l-1 and were subcultured every 4 weeks in order to get sufficient material to confirm transformation of the putative shoots obtained. Six, seven, one and six transgenic clones of the apples studied respectively have been obtained and confirmed by selection on the media containing the selection agent "PPT" and by PCR analysis using the suitable primers in all clones obtained for the presence of the selection" bar gene (447 bp) and the gene-of- interest "g2PS1" (1244 bp), with transformation efficiency of 0.4%, 0.6%, 0.1% and 0.3% respectively. These transgenic clones were multiplied further in vitro in the presence of the selection agent 'PPT' and rooted in vitro. Rooted transgenic plantlets were successfully acclimatized and are being kept under-containment conditions according to the biosafety by-law in Syria to evaluate their performance for fungal resistance. [Ali Bacha N.M., Batha M. & Abdul Kader A.M. (Syria). International Journal of Horticultural Science, 20(1–2): 15–23, 2014]

Hymenopteran parasitoids (Figitidae and Pteromalidae) of *Ceratitis capitata* (Diptera: Tephritidae) on loquat and guava in Tartous, Syria. Rates of parasitism by Hymenoptera varied between 11.45% and 14.9% in *Ceratitis capitata* pupae from field-infested loquat and guava orchards in Tartous, Syria. The predominant parasitoid was *Aganaspis daci* and this is the first record for Syria. Further studies are now required to evaluate their potential in biological control. [Ali Y. Ali, Ahmad M. Ahmad and Jafer A. Amar (Syria). Biocontrol Science and Technology, 25(2): 223-228, 2015].

Distribution of the root-knot nematode *Meloidogyne* spp., in tomato greenhouses at Lattakia and Tartus Province in Syria. A survey of 35 tomato greenhouses from Syrian provinces Tartus and Lattakia revealed the presence of *Meloidogyne incognita* and *M. javanica*. In Lattakia province, *M. javanica* was the dominant species (91%) and *M. incognita* found only once (9%). In Tartus province, *M. incognita* was the most prevalent species particularly in the southern parts (76%) and *M. javanica* occurred in several locations (24%) in northern Tartus. The majority of the sampled tomato cultivars were infected with two *Meloidogyne* species; once both species were detected on the same variety. [F. Toumi, L. Waeyenberge, R. Yousef, H. Khalil, K. Al-Assas and M. Moens (Syria). Pakistan Journal of Nematology, 32(2): 163-172, 2014].

TURKEY

Evaluation of fungal antagonists to control black mold disease under field conditions and to induce the accumulation of antifungal compounds in onion following seed and set treatment. Three isolates, AS3 (non-aflotoxigenic Aspergillus flavus Link), TRIC7 and TRIC8 (Trichoderma harzianum Rifai), from onion (Allium cepa L.) growing soils were recently found to control black

mold disease caused by Aspergillus niger (An) van Tieghem and to increase the accumulation of antifungal compounds in pot-grown onion sets. Their ability to increase bulb diameter and total soluble solids in marketable bulbs, to control black mold and to induce the production of antifungal compounds were tested in sets and marketable bulbs raised from treated seeds and sets, respectively, in naturally An-infested field soils at two locations. These isolates significantly controlled the disease at both locations, but they did not have any enhancing effect on set or bulb diameter and soluble solids in marketable bulbs. AS3 and TRIC8 in particular led to defense reactions with accumulation of antifungal compounds in sets and marketable bulbs in both locations. Different compounds were also identified in the fractions with highly antifungal effects. Nuray Özer and Levent Arın. (Turkey). Crop Protection, 65: 21–28, November, 2014].

TUNISIA

Prevalence of viruses infecting autochthonous grapevines in Tunisia. The incidence of virus infections was investigated in the grapevine germplasm collection at the *Institut National de la Recherche Agronomique de Tunisie*. In this grapevine collection, 162 different autochthonous cultivars were maintained, including numerous spontaneous ecotypes coming from different Tunisian grapevine growing regions. All accessions were sampled and analyzed by DAS-ELISA for the presence of Grapevine leafroll associated viruses 1, 2, 3 (GLRaV-1, -2, -3), Grapevine fanleaf virus (GFLV), Grapevine fleck virus (GFkV) and Arabis mosaic virus (ArMV), using commercial polyclonal antisera. Almost all the major grapevine-infecting viruses assayed, except for ArMV, were detected in the tested cultivars. Conversely, all the wild grapevine accessions were found to be free from the same viruses. Out of 141 cultivars submitted to DAS-ELISA, 40.4% were infected with at least one virus. GLRaV-3 was the prevailing virus (23.4%), followed by GLRaV-1 (19.6%), GFkV (9.2%), GLRaV-2 (4.2%), and GFLV (1.4%). Cultivars collected from northern regions (61.4%) were more infected than their homologues from southern regions (19.7%). [*N. Mahfoudhi, M. Harbi-Ben Slimane, M. Elair, I. Selmi, and H. Ben Hamda* (Tunisia). Tunisian Journal of Plant Protection, 9(2): 111-118, December, 2014].

Identification of *Alternaria* species recovered from stored durum wheat kernels in Tunisia. This study confirms the wheat natural infection by Alternaria species associated with black point disease of stored kernels. These species are able to produce plant mycotoxins as well as toxic metabolites, which may have consequences in the food industry and agriculture as well as in health services. Because of the tight link between fungal species and metabolite production, correct identification of the mould at the species level is required. For this purpose, morphological characters and molecular techniques based on the amplification and sequencing of the ITS1-5.8S-ITS2 region of the rDNA were used. The analysis identified six species of Alternaria, namely A. alternata, A. tenuissima, A. arborescens, A. mali, A. longipes, and *A. brassicae*. The most frequently isolated species were A. alternata and A. tenuissima with an overall prevalence of 36.1 and 30.6%, respectively. [*L. Gargouri-Kammoun, F. Bensassi, M. Mnari-Hattab, A. Rhouma, H. Bacha, and M.R. Hajlaou* (Tunisia). Tunisian Journal of Plant Protection, 9(2): 119-129, December, 2014].

The gum tree thrips, *Thrips australis*: Description, geographical distribution and host plants in Tunisia. The gum tree thrips, *Thrips australis*, was recorded during 2011 in Tunisia in the Center East coastal region. Moreover, it was encountered during 2012 in many other regions (North and Center West of the country). *T. australis* was found on different host plants among which *Eucalyptus* spp., *Citrus* spp., *Chrysanthemum* spp., *Calendula arvensis*, and *Tropaeolum majus*. [M. Elimem and B. Chermiti (Tunisia). Tunisian Journal of Plant Protection, 9(2): 163-169, December, 2014].

Distribution and hosts of *Monochamus galloprovincialis* in Tunisia. The pine sawyer beetle *Monochamus galloprovincialis* is one of the main vectors of the pathogenic pine wood nematode *Bursaphelenchus xylophilus*, the causal agent of pine wilt disease. Although the nematode is absent from northern Africa, the vector *M. galloprovincialis* has been previously reported in Morocco, Algeria and Tunisia. Despite these ancient reports, the insect´s distribution, hosts and biology are largely unknown for this part of the world. In this paper, we report on the presence of *M. galloprovincialis* in Tunisia, and record several new locations and the associated pine hosts, with brief notes on its emergence pattern. *M. galloprovincialis* was found to be widely distributed in Tunisia, being especially abundant on Aleppo and maritime pine forests. Insect was found to have a one-year life cycle, with the emergence pattern starting in the middle of May and prolonging until August, with a peak in June. This information will serve to develop a map intended to predict the risk of establishment and incidence of the pine wood nematode in Tunisia. [*M. Mejri, P. Naves, E. Sousa, and M.L. Ben Jamâa* (Tunisia & Portugal). Tunisian Journal of Plant Protection, 9(2): 171-176, December, 2014].

❖ Some Plant Protection Activities of FAO and Other Organizations

DESERT LOCUST SITUATION

Situation level: Caution

General Situation of the Desert Locust during November 2014 and Forecast until mid-January 2015 provided by the FAO Emergency Centre for Desert Locust (ECLO).

An outbreak continued in Sudan during November as swarms formed in the summer breeding areas of the interior and moved to winter breeding areas on the Red Sea coastal plains and laid eggs. Another outbreak developed on the Red Sea coast of Eritrea where hoppers formed bands. Intensive control operations were underway in both countries. Scattered adults were present on the Red Sea coast in Saudi Arabia and Yemen. During the forecast period, breeding will cause locust numbers to increase along both sides of the Red Sea, particularly in Sudan and Eritrea where hatching and band formation are expected. Intensive survey and control operations will be required in both countries. Elsewhere, the situation remained calm.

Western Region- The situation remained calm in November. Local breeding occurred in Niger and western Mauritania but locust numbers remained low. Locusts may be present in northern Mali but this could not be confirmed in the absence of surveys due to insecurity. In Northwest Africa, unusually heavy rains fell in Morocco and the Western Sahara that could eventually lead to good conditions for spring breeding.

Central Region- While the outbreak continued in Sudan, another outbreak developed on the Red Sea coast in Eritrea. As a result of good breeding, hoppers formed groups and bands on the central and northern coast, and ground teams treated 6,540 ha in November. In Sudan, intensive aerial and ground control operations continued in the summer breeding areas of the interior against hopper bands and swarms, treating 76,000 ha. Swarms that escaped control moved to the Red Sea coast and laid eggs by the end of November along a 250 km stretch and some 7,000 ha were treated. Although the outbreaks are currently confined to Sudan and Eritrea, there remains a risk that adult groups and a few small swarms may appear in southeast Egypt where so far only scattered adults and small-scale breeding have been reported. Scattered adults were also present on the Red Sea coast in Saudi Arabia and Yemen. Locust numbers will increase along both sides of the Red Sea, primarily in Sudan where hatching and band formation will occur in December and in Eritrea where a second generation of breeding is likely in January.

Eastern Region- The situation remained calm in November. Only isolated adults persisted in a few places of Rajasthan, India. No significant developments are likely.

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).

29TH SESSION OF THE COMMISSION FOR CONTROLLING THE DESERT LOCUST IN THE CENTRAL REGION, IN DUBAI, UNITED ARAB EMIRATIS, 23-27 NOVEMBER 2014

The FAO Commission for Controlling the Desert Locust in the Central Region (CRC), with the cooperation of the Ministry of Environment and water in United Arab Emirates organized the 29th Session of CRC and its 33rd Executive Committee Meeting, in Dubai, during the period 23 to 27 November 2014. The meeting attracted a large participation from the Commission member countries, from UAE, GCC countries, Egypt, Sudan, Yemen, Eritrea, and Ethiopia in addition to the participation from Desert Locust Commission in Western Region, South West Asia and Desert Locust Organization in Eastern Africa.

Crucial topics have been discussed, most importantly the level of readiness of the member countries to combat the Desert Locust, activation of contingency plans to avert the threats of locusts, methods to strengthen the capacity of countries. The meeting also reviewed the financial governance in terms of locusts and discussed enhancing the implantation of effective control plans to manage locusts pesticides, in addition to the implantation of environmental health and safety programs to combat the Desert Locust, and the regular activities that the commission is holding and the work plan for the coming years.

The CRC was established, in 1967, within the framework of the Food and Agriculture Organization of the United Nations (FAO). The Commission supports Desert Locust operations in 16 Member Countries (Bahrain, Djibouti, Egypt, Eritrea, Ethiopia, Iraq, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, Sudan, Syria, United Arab Emirates and Yemen).

PEST RISK ANALYSIS (PRA) TRAINING

Pest risk analysis (PRA) is an important tool for agriculture, trade, food security and the environment. This science-based process helps countries to protect their plant resources from pests while fulfilling their international trade obligations with plant products.

Pest risk analysis collects and analyzes scientific information and supports key decisions to protect plant health. These decisions have cascading effects on agricultural production, accessing and sustaining trade markets, enhancing food security and protecting the environment and biodiversity.

The FAO Regional Office for the Near East and North Africa organized two training progarmmes on pest risk analysis which were held in Iran and Egypt.

Twenty Plant Quarantine Officers from the National Plant Protection Organization in Iran were trained in Tehran, during the period 14-22 October, 2014.

Twelve plant quarantine professionals from the General Directorate of Plant Protection in Yemen and the Central Plant Quarantine Administration in Egypt were trained from 29 November to 4 December, 2014 at the FAO RNE Offices in Cairo, Egypt.

The trainings aimed at strengthening the capacities of the National Plant Protection Organizations and support for creation of qualified PRA national teams in Iran, Yemen and Egypt.

THE IPPC REGIONAL WORKSHOP FOR THE NEAR EAST AND NORTH AFRICA REGION. CAIRO, EGYPT, 27-30 OCTOBER 2014

The Regional IPPC Workshop for the Near East & North Africa Region was convened in Cairo, Egypt during the period 27-30 October, 2014. The workshop was organized by the FAO Regional Office for the Near East (RNE) with support of the International Plant Protection Convention (IPPC).

The workshop aimed mainly at reviewing and discussing the new draft International Standards for Phytosanitary Measures (ISPMs) approved by the Standard Committee

this year to ensure full involvement of the member countries in developing of these standards; and to ensure that the opinions and comments of the Near East and North Africa countries are incorporated in the drafts before final revision and approval by the governing body of the IPPC-Commission on Application of Phytosanitary Measures (CPM). The workshop also aimed at updating the participants on the development on the other IPPC related topics.

Three new draft ISPMs were discussed:

- Draft amendments to ISPM 5: Glossary of Phytosanitary Terms (1994-001),
- Draft ISPM: International movement of used vehicles, machinery and equipment (2006-004),
- Draft ISPM: International movement of seeds (2009-003).

The workshop provided the participants as well with a forum for discussion and information exchange on different phytosanitary and plant protection issues, and to discuss the challenges and support needed to build the capacities of the countries of the region for better implementation of the ISPMs.

In addition, a special session was held to share the information and raise the awareness of the National Plant Protection Organizations on some emerging pests that pose imminent threat to the region. Three presentations were delivered by invited experts from South Africa, KSA and Morocco on the following pests:

- Threat of Panama disease - Fusarium wilt disease (Fusarium oxysporum f.sp. cubense (Foc) on banana plantations.
- Alwijam disease (phytoplasma) on Date Palms.
- Al Bayoud disease (Fusarium oxysporum f.sp. albedinis) on Date Palms.

CAPACITY BUILDING IN THE IMPLEMENTATION OF THE ROTTERDAM CONVENTION AND MONITORING OF THE SEVERELY HAZARDOUS PESTICIDE FORMULATIONS (SHPF)

The FAO Regional Office for the Near East and North Africa with the support of the Rotterdam Convention Secretariat organized training programmes on the implementation of the Rotterdam Convention in Jordan and Oman. The programmes aimed at building the capacity of the national authorities towards better implementation of the Rotterdam Convention; and implementation of national programmes for survey and data collection on the Severely Hazardous Pesticide Formulations (SHPFs) and pesticide poisoning cases. During the training programmes, teams for the implementation of the programmes were formed; workplans for the implementation of a survey programme for SHPFs and poisoning cases in targeted areas with intensive use of pesticides, and forms for data collections were developed. The participants from different relevant sectors were trained on the use of the forms and the approach of the data collection. The results of the surveys will be discussed through national workshops to be held at the end of the programmes.

TRAININGS ON BIOLOGICAL CONTROL OF *TUTA ABSOLUTA* UNDER THE FRAME WORK OF THE FAO PROJECT TCP/RAB/3402

Iran: A training workshop on IPM of *Tuta absouluta*, with focus on biological control aspects, was held at the premises of the NPPO in Tehran, Iran during the period 16-24 June, 2014. Around 100 professionals from different plant protection directorates in different provinces and research and extension sectors have participated in the workshop. The workshop was facilitated by Mr. Juan A. Cortes, International Biological Control Expert from Spain. The workshop included presentations on the IPM experience of *Tuta absoluta* in Spain, survey methodology of Tuta Natural Enemies (NEs), application and conservation of NEs, mass-rearing of Tuta NEs, Tuta resistance against the chemical pesticides and the tolerance of NEs to the chemical pesticides.

Field visits were carried out to Isfahan, Azerbaijan, Golestan provinces to evaluate the application of the IPM programme in tomato fields and provide the necessary advice to support the biological control programmes in the visited provinces. Throughout the field visits, it was found that there are many fields and greenhouses producing tomato, pepper and other Solanaceae crops under IPM system with the application of the biological control only against pests (*Bacillus thuringiensis*, and natural enemies). Many NEs were observed on the yellow sticky traps that indication the richness of the NEs fauna.

Visits were also carried out to the natural enemies' mass-rearing facilities in the visited provinces to provide advice and recommendation for improvement of the rearing techniques. The visited units are producing *Trichogramma* spp, *Habrobracon hebetor* and *Nesidiocores tenuis.*

Egypt: A training workshop was held in Fayoum, Egypt during 29 September to 1 October, 2014 to train Farmer Field School facilitators and farmers on biological control of *Tuta absoluta.* 27 participants/FFS facilitators from three governorates (Al Giza, Al Sharkia and Al Fayoum) participated in the workshop in FFSs, in addition to farmers at the FFSs visited during the workshop. The programme of the workshop included the topics:

- survey, recognition and identification of *Tuta absoluta* natural enemies,
- methods of field mass-rearing and release of mirids (*Nesidiocoris tenuis*,..ect)
- attraction and conservation of NEs

During the workshop, the participants visited a facility for mass-production of Trichogramma in Fayuom and were familiarized with the process of the production.

TRAINING COURSE ON FFSS IN EGYPT

A national training course on "Establishment and Management of IPM/FFS" was conducted under the project "Management of Tomato Borer: *Tuta absoluta* in the Near East Region, TCP/RAB/3402". The workshop was held in Cairo during the period 8-12 June 2014, with field practical work at the FFSs in Al Giza and Al Sharkia Governorates. Twenty eight trainees "Researchers and Extension agents" from the Plant Protection Research Institute and the Directorate of Extension in the Ministry of Agriculture in Egypt have participated in the training. The trainees came from the different agricultural regions of Egypt namely Al Giza, Al Fayoum and Al Sharkia Governorates.

The objective of the training course is to strengthen the capacity of the group of facilitators for implementing IPM/FFSs on tomato to introduce to farmers suitable integrated tomato management tactics in order to help them better manage their crop and the related pests and

specifically Tomato Borer: *Tuta absoluta* in their fields, tunnels and green houses.

The training course focused on the followings issues:

- Providing the participants with basic skills and knowledge on non-formal adult education and facilitation of group processes.
- Implementing cropping calendar and curriculum design
- Emphasis on how to use participatory and experiential learning approach.
- Defining learning objectives for the IPM/FFS activity.
- Planning, organizing, implementing and evaluating IPM Farmer Field Schools.
- Problem solving skills and approaches

PROJECT ON SURVEILLANCE AND MANAGEMENT OF FRUIT FLIES IN LEBANON
BEIRUT, LEBANON, DECEMBER 9, 2014

Beirut December 9, 2014: The Food and Agriculture Organization of the United Nations (FAO) and the Lebanese Ministry of Agriculture lunched a FAO Technical Cooperation Project on "Surveillance and Management of Fruit Flies in Lebanon". The project will be implemented during a two-year period with FAO support.

Fruit flies are serious pests of fruit crops that cover more than 50% of the total cultivated area in Lebanon, in addition to vegetable crops which are also threatened by this pest. With absence of early detection measures and an effective management strategy, fruit flies can cause serious economic losses to many fruit crops. Reducing production and quality of fruit crops could undermine Lebanon's fruit exports. The financial losses associated with the infestation of fruit flies can exceed 80% of fruits production.

The main objective of this project is to implement a survey for mapping fruit flies, identifying the fauna of fruit flies and establishment of a countrywide monitoring and management programme. The project will strengthen the national capacities towards adopting and anchoring a national sustainable strategy for fruit flies ma nagement. This project responds directly to Lebanon's priority area of intervention, to ensure availability of safe and nutritious food, ensure trade sustainability, and strengthen national capacities to improve food security.

❖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 German local 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.

FIRST ANNOUNCEMENT THE 4TH INTERNATIONAL (REGIONAL) CONFERENCE OF APPLIED BIOLOGICAL CONTROL OF AGRICULTURAL PESTS. 19-22 OCTOBER 2015, CAIRO, EGYPT

The Egyptian Society for Biological Control of Pests (ESBCP) has the pleasure to welcome and invite regional scientists, researchers, academicians, and those who are involved with various aspects of biological control from government agencies, universities, research and extension institutions, organic farming, and international agencies to present and exchange expertise of all regional aspects of biological control, including recent development related to environment – friendly pest management strategies.

The 4th international (regional) conference of applied biological control of agricultural pests scheduled 19-22 October 2015 in Cairo, Egypt.

Important Dates:

- Registration: On-line registration starts 1st October 2014 at: esbcp2015@gmail.com or esbcp@esbcp.org
- Abstract submission: 1st October 2014 to 28th February 2015.
- Full paper submission: 1st June 2015.

For more details about the conference see: www.esbcp.org

KHALIFA INTERNATIONAL DATE PALM AWARD WELCOMES NEW APPLICATIONS FOR SEVENTH SESSION 2015

Applicants wishing to participate in the Seventh Session on of Khalifa International Date Palm Award are advised to apply from the 1st of June until 15 November 2014, announced General Secretariat of the Award.

Interested candidates can apply to any of the award five categories, which are:

1- Date Palm Research and studies.

2- Date Palm best producer (individual and/or institutions).

3- The best new Technology.

4- The best development project.

5- Influential Figure(s) – (most important achievements) in the Date Palm Industry.

The administrative office of the award will coordinate with the candidates to ensure the completion of all necessary paperwork.

For more information the General Secretariat of the Award welcomes all participants to apply and to visit the award website: www.kidpa.ae, Email: kidpa@uaeu.ac.ae

Prof. Abdelouahhab Zaid, Secretary General of Khalifa International Date Palm Award

THE FIRST NATIONAL SYMPOSIUM ON INTEGRATED PEST MANAGEMENT (SYNPIP) SOUSSE, TUNISIA, APRIL 20 - 21, 2015

The First National Symposium on Integrated Pest Management will be held on April 20-21, 2015 at the Hotel Marhaba Palace in ElKantaoui Port, Sousse (Tunisia). The Symposium will be organized by the Regional Research Center on Horticulture and Organic Agriculture (*Centre Régional des Recherches en Horticulture et Agriculture Biologique*) and the Tunisian Society for Sustainable

Agriculture (*Association Tunisienne pour une Agriculture Durable, ATAD*).

The overall objective of the symposium is to give the opportunities to researchers, students, technicians and professionals to share recent findings and new developments on integrated pest management. The symposium welcomes all who are involved in plant protection issues. All disciplines related to IPM including entomology, acarology, phytopathology, nematology, weed science, etc… are encouraged to participate. The symposium will include sessions for invited speakers, oral communications and posters.

Abstract not exceeding one page will be send to the E-mail Address of the Symposium: synpip2015@gmail.com

THE GLOBAL FOOD SECURITY INDEX

The Global Food Security Index considers the core issues of affordability, availability, and quality across a set of 109 countries. The index is a dynamic quantitative and qualitative benchmarking model, constructed from 28 unique indicators, that measures these drivers of food security across both developing and developed countries. The study looks beyond hunger to the underlying factors affecting food insecurity. To increase the ongoing relevance of the study, the index will employ a quarterly adjustment factor for food price fluctuations to examine the risk countries face throughout the course of the year. More information...(source: ISPP Newsletter 44 (12) December 2014).

❖ Arab Society for Plant Protection News

ELEVENTH ARAB CONGRESS OF PLANT PROTECTION

The 11th Arab Congress of Plant Protection organized by the Arab Society of Plant Protection (ASPP) and the Balqaa Applied University was held in Amman, Jordan during the period 9-13 November, 2014. Around 300 participants from 17 Arab countries and from USA, France, Spain, Italy, Germany, Switzerland and United Kingdom participated in this event. Around 450 papers were presented in the meeting as either oral or poster presentations. The third day of the meeting was dedicated for a touristic and agricultural trip made to the Dead Sea and Jordan Valley, where many vegetables and date palm farms were visited. In the closing ceremony awards for the best presentations by graduate students was announced. In this occasion, ASPP offered the "Society Fellow" award to five scientists for their distinguished service to the Society and for their professional excellence, and those were: Dr. Ahmed Heneidy (Egypt), Dr. Saeed Baangood (Yemen), Dr. Bassam Bayaa (Syria), Dr. Abdelsattar Aref Ali (Iraq) and Dr. Barakat Abu-Rmeileh (Jordan). In addition, The Iraqi Date Palm Network Award was given to Dr. Muna Al-Dosary from the Kingdom of Saudi Arabia for her distinguished research on the control of red palm weevil.

NEW EXECUTIVE COMMITTEE OF THE ARAB SOCIETY OF PLANT PROTECTION

During the 11th Arab Congress of Plant protection held recently in Amman, Jordan a new executive committee for the Arab Society for Plant Protection (ASPP) was elected. The composition of the new committee which will serve for three years (2015-2017) is composed as follows (photo, from left to right):

- Dr. Mohamad Said El-Zemeity (Egypt), President
- Dr. Ibrahim El-Jboory (Iraq), Vice-President
- Dr. Mustapha Haidar (Lebanon), Secretary-Treasurer
- Dr. Ahmed Heneidy (Egypt), member and chairperson of Membership Committee
- Dr. Safaa kumari (Syria), member and chairperson of the Arabization of Plant Protection Terms Committee
- Dr. Ahmed Katbeh (Jordan), member and chairperson of the Awards Committee
- Dr. Khalifa Deabaj (Lybia), member and chairperson of the Publications Committee
- Dr. Khaled Makkouk (Lebanon), member and Editor-in-Chief, Arab Journal of Plant Protection

"AN ASPP MEMBER RECEIVES AN INTERNATIONAL AWARD"

Dr. Mustapha El Bouhssini, Principal Entomologist at the International Center for Agricultural Research in the Dry Areas (ICARDA), Morocco, received **the 2014 Distinguished Scientist Award** from the International Branch of the Entomological Society of America (ESA). This award is recognition of Mustapha's dedicated work, which has yielded significant contributions to the development of Integrated Pest Management options of cereal and legume insect pests that are now being increasingly used in North Africa, West and Central Asia. This is the latest in a series of awards over the past decade. This year Dr. El Bouhssini received an Award of Merit for his research in Morocco on Hessian fly resistance in wheat from the International Plant Resistance to Insects Working Group. He also received the 2014 Distinguished Alumnus from the Department of Entomology at Kansas State University. These follow an International Plant Protection Award of Distinction from the International Association for Plant Protection Sciences (IAPPS) in 2007 and a CGIAR Award in 2006 that recognized Dr. El Bouhssini's efforts to apply integrated pest management techniques in the fight against Sunn Pest.

❖Publications

NEW BOOKS

Fungal RNA Biology

Edited by Ane Sesma and Tobias von der Haar

Fungal RNA Biology covers a wide range of biological mechanisms in yeasts and filamentous fungi, including organisms widely used as models for general aspects of eukaryotic biology, and of great importance in industrial applications, medicine and agriculture. Despite the diversity of the estimated one million fungal species (saprophytic, parasitic, and mutualistic), fungi share common features distinctive from plants and animals and have been grouped taxonomically as an independent eukaryotic kingdom.

This book presents an overview across the diverse functions RNA plays in fungal biology, highlighting the latest state of knowledge, as well as remaining questions and future challenges in this area.

In this book, 15 chapters written by experts in their fields, cover the RNA-dependent processes that take place in fungal cells ranging from formation of coding and non-coding RNAs to mRNA translation, ribosomal RNA biogenesis, gene silencing, RNA editing and epigenetic regulation.

This Important new work provides:

- Comprehensive overview of key RNA-dependent processes regulating fungal gene expression
- Concise presentation of the latest insights in the field
- Information from the most significant RNA database
- Authoritative knowledge by international experts in the field

©2014; 6.5" × 9.5" hardcover; 395 pages; 51 figures; 10 tables; 3 pounds. Price 219 US $.

SELECTED RESEARCH PAPERS

Bactiria

Effect of microwave radiation on dry bean seed infected with *Xanthomonas axonopodis* pv. *phaseoli* with and without the use of chemical seed treatment. A.P. Friesen, R.L. Conner, D.E. Robinson, W.R. Barton, C.L. Gillard. Crop Protection, 65: 77-85, November, 2014.

Identification of three potential insect vectors of *Xylella fastidiosa* in southern Italy. Toufic ELBEAINO, Thaer YASEEN, Franco VALENTINI, Issam Eddine BEN MOUSSA, Valerio MAZZONI, Anna Maria D'ONGHIA. Phytopathologia Mediterranea, 53(2): 328-332, 2014].

Integrated effect of *Glomus mosseae* and selected plant oils on the control of bacterial wilt disease of tomato. (Egypt). Kamal A.M. Abo-Elyousr, Mohamed E.A. Seleim, Kenawy M.H. Abd-El-Moneem, Frag A. Saead. Crop Protection, 66: 67-71, December, 2014.

Selection and characterization of *Bacillus thuringiensis* mutants over-producing δ-endotoxins. [Hichem Azzouz, Fatma Daoud, Dalel benfarhat-Touzri, Slim Tounsi (Tunisia). Journal of Stored Products Research, 59: 82-87, October 2014].

Entomology

Resistance in the mealybug *Phenacoccus solenopsis* Tinsley (Homoptera: Pseudococcidae) in Pakistan to selected organophosphate and pyrethroid insecticides. [Bushra Saddiq, Sarfraz Ali Shad, Hafiz Azhar Ali Khan, Muhammad Aslam, Masood Ejaz, Muhammad Babar Shahzad Afzal. Crop Protection, 66: 29-33, December, 2014].

Fungi

A novel method for controlling rice blast disease using fan-forced wind on paddy fields.. [Yoshihiro Taguchi, Mohsen Mohamed Elsharkawy, Naglaa Hassan and Mitsuro Hyakumachi. (Egypt & Japan). Crop Protection, 63: 68–75, 2014].

Aflatoxin contamination of corn under different agro-environmental conditions and biocontrol applications. [Cesare Accinelli, Hamed K. Abbas, Alberto Vicari, W. Thomas Shier Crop Protection, 63: 1-8, September 2014].

Assessment of genotypic diversity among *Fusarium culmorum* populations on wheat in Iran. [Behnam POUZESHIMIAB, Mohammad RAZAVI, Hamid Reza ZAMANIZADEH, Rasoul ZARE, Saeed REZAEE (Iran). Phytopathologia Mediterranea, 53(2): 300-310, 2014].

Characterization of a *Fusarium poae* world-wide collection by using molecular markers. [María I. Dinolfo, Eliana Castañares. European Journal of Plant Pathology, 140(1): 119-132, September 2014].

Gramineous and non-gramineous weed species as alternative hosts of *Fusarium graminearum*, causal agent of Fusarium head blight of wheat, in Argentina. [C.A. Mourelos, I. Malbrán, P.A.

Balatti, P.D. Ghiringhelli, G.A. Lori. Crop Protection, 65: 100-104, November, 2014].

Microsatellite and mating type primers for the maize and sorghum pathogen, *Exserohilum turcicum*. [M. P. Haasbroek, M. Craven, I. Barnes, B. G. Crampton. Australasian Plant Pathology, 43(5): 577-581September 2014].

Suppression of Cucumber Powdery Mildew by Supplemental UV-B Radiation in Greenhouses Can be Augmented or Reduced by Background Radiation Quality. [A. Suthaparan, A. Stensvand, K. A. Solhaug, S. Torre, K. H. Telfer, A. K. Ruud, L. M. Mortensen, D. M. Gadoury, R. C. Seem, and H. R. Gislerød. (Norway). Plant Desiease, 98(10): 1349-1357, October 2014].

The control of isariopsis leaf spot and downy mildew in grapevine cv. Isabel with the essential oil of lemon grass and the activity of defensive enzymes in response to the essential oil. [A.J. Maia, J.S.B. Oliveira, K.R.F. Schwan-Estrada, C.M.R. Faria, A.F. Batista, W.F. Costa, B.N. Batista. Crop Protection, 63: 57-67, September, 2014].

Pesticides

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- **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 and S. Khoja (Syria & Morocco) (Pages 103-108).
- **Relationship between fig tree trunk diameter and infestation with the stem borer *Batocera rufomaculata.*** Ali Yaseen Ali, A. Ahmad and J. Amar (Syria) (Pages 109-112).
- **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 (Sudan & Kenya) (Pages 113-118).
- **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 (Syria) (Pages 119-124).

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- **Prevalence of olive peacock's eye spot (*Spilocaea oleagina*) and evaluation of its damages in different climatological regions of Syria.** A. Khafteh (Syria) (Pages 125-130).

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- **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 (Syria) (Pages 131-139).
- **The effect of temperature on the development of the brown soft scale, C*occus hesperidum* L. under laboratory conditions.** E. Mohamed, A.M. Basheer and N. Abo Kaf (Syria) (Pages 140-146).
- **Some biological characteristics of the parasitoid *Aphytis melinus* Debach, reared on the oleander scale insect, *Aspidiotus nerii* Bouche.** M.A. Basheer, L. Aslan, A. Al-Refa'a, A. Abou Al-Sel, A. Saleh and F. Abdul Razaq (Syria) (Pages 147-151).

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- **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 (Iraq) (Pages 152-160).
- **Population changes and control of *Tuta absuluta* Meyrick along the Syrian coast.** M. Mofleh, R. Abboud, H. Habaq, O. Hammodi, F. Al-Quem, L. Adra and M. Ahmed (Syria) (Pages 161-168).

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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 (Syria) (Pages 169-176).

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- **Calculation of the sensitivity of the insects Depending on its insecticide- resistance.** A.R.Y. Al-Jubury (Iraq) (Pages 177-181).

NATURAL ENEMIES

- **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, H. Habaq, F. Al-Kaum and M. Ahmed (Syria) (Pages 182-191).

PAPERS WHICH WILL BE PUBISHED IN THE ARAB JOURNAL OF PLANT PROTECTION (AJPP), VOLUME 32, ISSUE 3, DECMBER 2014

- **Detection of the major groups of *Bemisia tabaci* Genn. spread on different hosts in Syria coastal based on random DNA indices.** A.M. Mouhanna, H. Barhoum, L. Assllan and A. Kassem.
- **First record of nine species of thrips (Insecta: Thysanoptera) in Qatar.** M. Mirab-balou, S.L. Yang and X.L. Tong.
- **Antagonism between plant growth promoting rhizobacteria and *Fusarium oxysporum* f. sp. *lentis* Vasud. & Srin., the**

causal agent of vascular lentil wilt under laboratory conditions. M. Ghanam, M.A. Nahlawi and S.E. Khabbaz.

- **Efficacy of the coccinellid predator *Serangium parcesetosum* Sicard for controlling *Bemisia tabaci* Genn. on cucumber and tomato plants under protected cultivation in Syria.** R. Abboud, M. Moufleh and M. Ahmed

- **First record of Nematode Root Knot on *Zennia elegans* Caused by *Meloidogyne javanica* plant in Erbil Governorate, Kurdistan Region, Iraq.** H.H. Ali, K.M. Fatah and A.I. Ahmed

- **Survival and predation potential of the syrphid predator, *Episyrphus balteatus* DeGeer when fed on the black bean aphid, *Aphis fabae* Scopoli. under laboratory conditions.** R. Almohamad and F. Aldabel.

- **New record of four species for the genus *Gryllotalpa* (Orthoptera: Gryllotalpidae) in Iraq.** R.F. El-Jassani and R.K.I. El-Jboory.

- **Effect *of Citrus tristeza virus* infection on quality of Balady common orange and Satsuma fruits in Hraisoon, Syria.** R.B. Hamdan, J. Mokawal and I.D. Ismail.

- **Laboratory rearing of entomopathogenic nematodes on Mediterranean flour moth *Ephestia kuehniella* Zell.** A.M. Basheer, A.A. Jawish and K. Al- Assas.

- **Field study of some biological characteristics of the Dubas Bugg *Ommattissus lybicus* De. Bergevin in Aljalla date palm Oasis in Al-Bokamal city in Syria.**A.M. Basheer, H. Bilal and H.A. Ali

- **Production of polyclonal antiserum for a Syrian isolate of Sweet potato feathery mottle virus (SPFMV).** E.H. Akel, S. Al-Chaabi, Sh. Sankary, Y.A. Ahmad and I.D. Ismail

- **Survey and description of introduced *Eucalyptus*, and periods of its use as a source of pollen and nectar for honey bees, in Sweida, south of Syria.** M.H. Dawarah, S. Sarbouk and A. Hatoum

- **Efficiency of some biological control agents on lesser date moth *Batrachedra amydraula* Meyrick in central Iraq.** Jasim K. Mohammad, Radhi F.Al-Jassani, Abdul-Sattar A. Ali and Mustapha El-Bouhssini

- **Field evaluation of the promising chickpea genotypes reaction against Ascochyta blight disease.** O. Atiq, M.M. Yabrak, A. Nasif, A. Katnajeh and B. Attar

EVENTS OF INTEREST

2015

*** 23-26 March 2015**

The 8th International Integrated Pest Management Symposium. Salt Lake City, Utah, USA. Contact Elaine Wolff Contact Email: wolff1@illinois.edu, See: http://www.ipmcenters.org/IPMSymposium15/

*** 29 March to 02 April 2015**

International Workshop on Fungal Grapevine Diseases. Eger, Hungary. Contact: kiss.levente@agrar.mta.hu, See: http://grapedisease.uni-eger.hu/.

*** 20-21 April 2015**

The First National Symposium on Integrated Pest Management (SYNPIP) Sousse, Tunisia. Contact: synpip2015@gmail.com

*** 03-06 May 2015**

The 5th International Congress of the Plant Protection Research Institute. Giza, Egypt. Contact: plantprotection5@yahoo.com

***. 7-11 June 2015**

III International Symposium on Postharvest Pathology: Using Science to Increase Food Availability. Bari, Italy, Web: http://postharvestbari2015.it/

*** 08-12 June 2015**

23rd International Conference on Virus and Other Graft Transmissible Diseases of Fruit Crops. Aiina Center, Morioka, Japan. Contact: yoshikawa@iwate-u.ac.jp Website: http://icvf.jki.bund.de/

*** 05-08 July 2015**

14th International Cereal Rusts and Powdery Mildews Conference. Copenhagen, Denmark. Contact: Sonja.Graugaard@agro.au.dk See: http://emcrf.au.dk/icrpmc2015/welcome-to-the-conference/

*** 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

*** 21-25 September 2015**

10th European Vertebrate Pest Management Conference. in Seville, Spain. See**:** http://www.evpmc.org/

*** 19-22 October 2015**

The 4th International (regional) Conference of Applied Biological Control of Agricultural Pests. Cairo Egypt**.** See**:** www.esbcp.org

2016

*** 25-30 September 2016**

The XXV International Congress of Entomology in Orlando, Florida, USA. See: http://ice2016orlando.org/

2018

*** 29 July – 03 August 2018**

11thInternational Congress of Plant Pathology (ICPP2018) in Boston, Massachusetts, USA. See: http://www.icpp2018.org/

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