



Arab and Near East Plant Protection Newsletter



Number 60, December 2013

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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

Maghreb Countries: Most Common Important Phytosanitary Issues

Maghreb countries "Libya, Tunisia, Algeria, Morocco and Mauritania" are sharing most of phytosanitary issues as they are neighboring countries occupying the North-West region of the African continent. These problems have pushed the Maghreb countries to a tight cooperation between them not only at the numerous international and regional phytosanitary organizations level, but also at the closer level of the Arab Maghreb Union, where meetings are convened and workshops are organized to consult, to discuss and to collaborate in facing the evolution of the phytosanitary situation that concerns all of these countries.

Among those dangerous pests that united the Maghreb countries and some other neighboring countries to control it, is the desert locust. This pest is gathering a very important part of the attention of the Maghreb countries regarding the numerous regions that the desert locust invades, usually starting by Mauritania, reaching Libya and Tunisia, crossing Morocco and Algeria as was the cases during 1988 and 2005. We can also remember how the tomato miner invaded in nearly two years (2008-2010) all Maghreb countries starting by Morocco and reaching Libya, and settled in all these regions where it needed to cohabit with it using all available control methods.

Among other pests that emerged since some years, red palm weevil, which is existing presently in the North of Morocco (Tangier since 2008), the suburbs of Tunis (since late 2011) and in Tripoli and Eastern Libya since years. We think that this pest would break through other regions regarding the slow dealing with it because of the shortage of the human, material and financial resources. Also, among other dangerous diseases that break until now through Morocco (since 2006), Algeria (2010) and Tunisia (2012), we have the pome fire blight which is presently quickly disseminating in many regions. We have also to keep in mind the "bayouth" disease of palms existing in Morocco and the West side of Algeria which succeeds until now to stop its propagation, and we need to continue the collective effort of all of the Maghreb countries to protect the non infested regions from this dangerous disease.

In another phytosanitary field, there is continuous work and important reform performed by most of Maghreb countries concerning the agricultural pesticides. And with regarding the total conviction of human being presently by the danger and harm of these pesticides, all developed countries are working to improve the pesticide quality to cause the lowest possible harm to health and environment and at the same time to reduce to the minimum possible their use in agriculture. We can here report that the European Union have succeeded between 1993 and 2009 to reduce by three quarters the number of the active ingredients accepted to be used in Europe (from 1000 to only 250 actives ingredients), and the French plan to reduce the use of the agricultural pesticides by 50% between 2010 and 2018.

In this general frame oriented to account on the integrated pest management with the reduction of the chemical control to its lowest limits, Tunisia and Morocco, and presently Algeria, have revised methods dealing with the agricultural pesticides registration to reach the use of only the high quality pesticides preserving the human health and the environment safety. And Tunisia succeeded in this procedure (between 2009 and 2012) to revise the registration of around 1200 agricultural pesticides, most of them were low quality generic pesticides, and to keep only about 500 pesticides of high or at least acceptable quality, which corresponds to the used active ingredients from 250 to only 200, during the indicated period.

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INVASIVE AND NEW PESTS

IRAN

First Report of a Natural Occurrence of Tomato yellow fruit ring virus on Pepper in Iran.

Tospoviruses are considered one of the most devastating viruses in different crops and ornamentals worldwide. There have been increasing records of the natural occurrence of Tomato yellow fruit ring virus (TYFRV) in Iran (e.g., 1,2,3), a recently proposed species in the genus *Tospovirus* (4). During the growing seasons 2010 to 2011, surveys were conducted in pepper fields (*Capsicum annuum*) in Tehran province, one of the main vegetable producing areas of Iran, to detect the presence of tospovirus species infecting this crop, including *Groundnut ringspot virus* (GRSV), *Impatiens necrotic spot virus* (INSV), *Iris yellow spot virus* (IYSV), *Tomato chlorotic spot virus* (TCSV), *Tomato spotted wilt virus* (TSWV), TYFRV, and *Watermelon silver mottle virus* (WSMoV). Overall, 14 fields were surveyed and 119 pepper leaf samples from plants showing tospovirus-like symptoms of yellow mosaic, chlorosis, and necrosis were collected. Each leaf sample was tested by double-antibody sandwich (DAS)-ELISA using specific antisera (Bioreba, Reinach, Switzerland; Loewe, Sauerlach, Germany; DSMZ, Braunschweig, Germany) for the presence of the aforementioned tospoviruses. Based on the results, TYFRV were found in 21 samples (17.6%) collected from five fields surveyed. None of the samples had a positive reaction in ELISA to GRSV, INSV, IYSV, TCSV, TSWV, and WSMoV. To confirm testing, six leaf samples that were found positive for TYFRV in ELISA tests were mechanically inoculated on *Petunia* × *hybrid* and *Nicotiana rustica*; for all the samples studied, the inoculated plants showed typical necrotic local lesions of tospoviruses, and chlorotic or necrotic spots followed by systemic infection, respectively; their infection was subsequently confirmed by ELISA. Four out of the six samples also were tested by reverse transcription (RT)-PCR technique using previously described specific primers (2). The PCR reaction, in agreement with ELISA tests, resulted in the specifically amplification of a ~1.2-kb fragment of TYFRV RNAs. Using the PCR amplification primers mentioned above, the nucleotide sequences of nucleoprotein (N) genes of two isolates, namely TY-PepT43 and TY-PepT74, were determined

(GenBank Accession Nos. KC354692 and KC354693, respectively); BLAST search results confirmed the presence of TYFRV and showed high nucleotide identities (99.0%) to TY-PF36 isolate of the virus. The virus has been previously reported on potato, tomato, ornamental plants, and some weed species in Tehran Province (1,3,4). This coupled with the presence of TYFRV vector, i.e., *Thrips tabaci*, in the same region (1), may have resulted in the occurrence of the virus on pepper plants. To our knowledge, this is the first report of the natural occurrence of TYFRV from pepper plants in Iran. [A. R. Golnaraghi, A. Hamed, S. Yazdani-Khameneh and T. S. Khosroshahi (Iran). Plant Disease, 97(9): 1259, 2013].

LEBANON

First Report of Cucumber vein yellowing virus on Cucumber in Lebanon.

In a 2-year (2008 to 2009) wide-scale survey of viruses infecting cucurbits, a limited number of greenhouse-grown cucumber (*Cucumis sativus*) plants showed vein-yellowing symptoms. Greenhouses were infested with whiteflies and infection with *Cucumber vein yellowing virus* (CVYV) was suspected. CVYV is widely distributed in southern Europe in both open field and protected cucurbit crops. Total RNA was extracted from seven plants with vein yellowing symptoms using TRI Reagent (Sigma-Aldrich, St Louis, MO). RT-PCR tests using CVYV-specific primers (CV+/CV-) targeting the coat protein of CVYV gave amplicons of the expected size from seven plants. The sequence of one representative isolate, CVYV-LB3 (GenBank Accession No. JF289167), showed 95.2-97% pairwise nucleotide identity with isolates from neighbouring countries. In 2012, CVYV-like symptoms were not observed in greenhouses in the same areas. In early spring 2013, a total of 16 leaf samples with vein-yellowing symptoms were collected from the northern coastal areas (Jbeil, Amshit, Tabarja) and 11 samples showing only yellowing on older leaves from the southern coast (Jiyeh). CVYV was detected in all samples from the northern coast and in four samples from the southern coast. Four isolates from northern Lebanon and two from southern Lebanon showed high pairwise nucleotide and amino acid identities between these isolates which ranged from 95.1 to 100% and 98.5 to 100%, respectively. The inter-population structure of CVYV in Lebanon showed high variability as compared to the homogenous Spanish population. For transmission tests, non-viruliferous whiteflies

(*Bemisia tabaci*) were exposed for an 18-h acquisition access period on vein-yellowed leaves followed by a 24-h inoculation access period to healthy cucumber plants (5-leaf stage). In addition, leaves with vein-yellowing symptoms were ground in 0.1 M phosphate buffer (pH 7.0) and sap-inoculated on carborundum-dusted cucumber (cv. Delta) and squash (*Cucurbita pepo* cv. FarajF1) plants. Vein yellowing symptoms developed 9 to 11 days post-inoculation on all whitefly inoculated plants, while symptoms were delayed till 3 weeks post inoculation on seven out of eight sap-inoculated plants. All symptomatic plants were positive for CVYV by RT-PCR. Furthermore, surveyed plants were also tested for Cucurbit chlorotic yellows virus (CCYV) and *Cucurbit yellow stunting disorder virus* (CYSDV), two criniviruses reported previously in Lebanon, by RT-PCR. Double or triple infection of CCYV and CYSDV occurred in 18 out of 20 of the CVYV-infected plants. During the past 5 years, a limited number of cucumber plants showed CVYV symptoms. This indicates that CVYV occurrence is sporadic. However, its occurrence in mixed infection with criniviruses may have damaging economic implications to cucurbit production. To our knowledge, this is the first report of CVYV on cucurbits in Lebanon and its occurrence in co-infection with CCYV. [P.E. Abrahamian, H. Sobh, R. Seblani, J. Samsatly, M. Jawhari, and Y. Abou-Jawdah. (Lebanon). *Extracted from Plant Disease*, 97(11):1516, November, 2013].

PAKISTAN

First Report of Iris yellow spot virus Infecting Onion in Pakistan. Onion (*Allium cepa* L.) is an important vegetable crop in Pakistan. According to the Food and Agricultural Organization (FAO), Pakistan is the world's fifth largest onion producer. The area and production is 127.8 thousand hectares and 1.7 million tons, respectively, with a yield of 13.8 tons per hectare during 2012. The agro-ecological diversity in the country enables onion production almost year round. Iris yellow spot virus (IYSV; family *Bunyaviridae*, genus *Tospovirus*), transmitted principally by *Thrips tabaci*, is an economically important viral pathogen of bulb and seed onion crops in many onion-growing areas of the world. In Asia, IYSV has been reported in India and Sri Lanka. During March to May 2012, as part of a survey for tospoviruses in vegetables, symptoms suspected to be caused by IYSV were observed on bulb and seed onions grown in farmers' fields in Faisalabad, Nankana, Sheikhpura, and Sialkot districts of Punjab. Symptoms consisted of spindle-shaped,

straw colored, irregular chlorotic lesions with occasional green islands on the leaves. Approximately 60% of the fields surveyed had about 30% of the plants with these symptoms. The presence of the virus was confirmed with an IYSV-specific ELISA kit (Bioreba). IYSV infection was verified by RT-PCR with primers IYSV-F (TAAAACAAACATTCAAACAA) and IYSV-R (CTCTTAAACACATTTAACAAGCA) as forward and reverse primers, respectively. Amplicons of approximately 1,100 bp were obtained from the symptomatic samples, but not from healthy and water controls. The amplicons were cloned and sequenced. The IYSV-Pakistan isolates (GenBank Accession Nos. KF171103, KF171104, and KF171105) had the highest nucleotide sequence identity of 99% with the corresponding region of an IYSV isolate from Chile (DQ150107). To our knowledge, this is the first report of IYSV infecting onion in Pakistan. The relatively widespread occurrence of IYSV underscores the need for systematic surveys to assess its incidence and impact on onion bulb and seed crops so that appropriate management tactics can be developed. [R. Iftikhar, S. Bag, M. Ashfaq, and H.R. Pappu (Pakistan). *Plant disease*, 97(11):1517, 2013].

TURKEY

First Report of Artichoke yellow ring spot virus in Globe Artichoke in Turkey. Turkey is one of the main globe artichoke (*Cynara cardunculus* L. subsp. *scolymus* (L.) Hayek) producers in the world. Cultivation of this crop is done mainly in the Aegean and Eastern Marmara regions with asexually propagated cultivars such as Bayrampasa and Sakiz. More than half of total globe artichoke production in Turkey is obtained from the provinces of Izmir, Aydin, and Mugla in the Aegean region. Surveys in 2011 and 2012 were carried out to look for the presence of *Artichoke yellow ringspot virus* (AYRSV), *Tobacco mosaic virus* (TMV), and *Tomato spotted wilt virus* (TSWV) in the globe artichoke production areas in these three provinces. Double antibody sandwich (DAS)-ELISA and reverse transcriptase (RT)-PCR assays conducted for TMV and TSWV showed that the samples were not infected with these two viruses. Due to the lack of commercial ELISA kits against AYRSV, RT-PCR and biological indexing were used for its identification. Leaf tissues from 35 symptomatic and 25 symptomless plants were sampled and analyzed by RT-PCR using as template total RNAs extracted by a silica gel method (1). RT-PCR was conducted as previously reported (1). A PCR product of the expected size

(about 530 bp) was obtained from five plant samples that were collected from Izmir province and had symptoms of bright yellow spots and line patterns on the leaves. The incidence of diseased plants in the fields ranged from 1 to 5%. In previously conducted studies, these symptoms were defined as typical symptoms of AYRSV on artichokes (2, 3, 4). One of the PCR products was cloned and sequenced. BLASTn analysis of the obtained sequence (GenBank Accession No. KC622054) showed 92% nucleotide identity with the partial RNA1 sequence of an AYRSV isolate from *Allium cepa* (AM087671.2). Furthermore, selected test plants were mechanically inoculated with sap from plant samples that were positive in RT-PCR. Chlorotic local lesions and systemic mottling symptoms were observed on *Chenopodium quinoa*; chlorotic lesions, mosaic, and deformation on *Cucumis sativus*; and systemic mosaic, reddish necrotic local lesions, and malformation on *Phaseolus vulgaris* (French bean). Results of the biological tests were confirmed by RT-PCR. AYRSV has a wide host range including artichoke and six other cultivated plant species and can be easily transmitted by seed, plant sap, and vegetative propagation (3). To our knowledge, this is the first report of natural infection of globe artichoke by AYRSV in Turkey. AYRSV infections can have a detrimental effect on the growth and yield of artichoke plantings. This assay will be useful for further epidemiological studies. [I. C. Paylan, M. Ergun, and S. Erkan (Turkey). Plant Disease, 97(10): 1388, 2013].

First Report of Fire Blight Caused by *Erwinia amylovora* on Crabapple (*Malus floribunda*) in Turkey. Fire blight is a destructive and sporadic disease of crabapple (*Malus floribunda*) and other plants in the Rosaceae in many areas of the world. From 2007 to 2010, sudden wilting, shriveling of flowers, leaf and shoot blight, and cankers with brown discoloration on twigs of crabapple were observed in residential landscapes of Konya Province, Turkey. Disease incidence ranged from 20 to 40% in different areas of this province, and surveys showed that ~163 ha were infested. Isolations were made from sections of symptomatic leaves, shoots, and cankers using 70% ethanol for 1 s to surface-sterilize the tissue sections, followed by rinsing three times in sterilized distilled water (SDW). Then, a 1 g subsample of each tissue section was homogenized in 10 ml phosphate buffered saline (PBS), and a 10-fold serial dilution of each homogenate prepared for six dilutions. From each homogenate, an aliquot of each dilution was plated onto 5% nutrient sucrose agar and King's B agar media, and the plates incubated for 2

to 3 days at 27°C (3). Bacterial strains were identified on the basis of biochemical, physiological (2), and molecular tests (1). Twenty-seven representative bacterial strains were each gram negative, rod-shaped, mucoid, fermentative, yellow-orange on Miller and Scroth agar medium, positive for levan formation and acetoin production, and showed no growth at 36°C. The strains were also positive for gelatin hydrolysis and negative for esculin hydrolysis, indole, urease, catalase, oxidase, arginine dihydrolase, reduction of nitrate, and acid production from lactose and inositol (2). Two reference strains of *Erwinia amylovora* (EaP28 and NCPPB 2791) from a culture collection at Selcuk University were used as positive control strains. All strains induced a hypersensitive response in tobacco (*Nicotiana tabacum* cv. White Burley) plants within 24 h after inoculation with a 10⁸ CFU/ml bacterial suspension in SDW (~50 µl), and the strains produced ooze on inoculated immature pear fruit slices cv. Ankara. All strains were identified as *E. amylovora* using the species-specific primers A/B (1), which amplified a 1 kb DNA fragment by PCR assay. Pathogenicity was confirmed by inserting a suspension (10⁸ CFU/ml SDW) of each of the 27 bacterial strains and two reference strains, EaP28 and NCPPB 2791, into actively growing shoot tips of 3-year-old plants of *M. floribunda* cv. Hilleri, using a 0.46 mm-diameter hypodermic needle. Leaf and shoot blight symptoms typical of fire blight were observed within 2 weeks. SDW was injected similarly as a negative control treatment, and no symptoms were observed. All tests were repeated three times with the same results. Re-isolations were done from the control plants as well as shoots and leaves inoculated with the two reference strains and the 27 bacteria identified as *E. amylovora*. Bacteria isolated from inoculated plants were identified as *E. amylovora* using the biochemical, physiological, and molecular tests described above, but this bacterium was not isolated from the control plants. To our knowledge, this is the first report of *E. amylovora* on crabapple in Turkey. [K. K. Bastas and A. Y. Ozturk (Turkey). Plant Disease, 97(9): 1244, 2013].

YEMEN

First Record of the Red Palm Weevil [*Rhynchophorus ferrugineus* oliv. (Coleopteran: Curculonidae)] in Yemen. The red palm weevil [*Rhynchophorus ferrugineus* oliv. (Coleopteran : Curculonidae)], is an important tissue_boring pest of date palm in neighboring countries and in many parts of the world. It was recorded for the first time in Yemen in May 2013 in Wadi-Hadhramout in

AL-Aggad area in AL-Gaten sector. All stages of the insect: larva, cocoon (pupa) and adult insects were seen in the infested stem of date palm trees. Most symptoms of the infection and the stages of the insect were exactly as known for red palm weevil. The first resource of the infection is unknown, but it may have entered the country with the infested date palm trees unofficially introduced from neighboring countries. Detection and monitoring of red palm weevil should be undertaken in other areas of Wadi-Hadhramout and all places growing date palm trees in Yemen. (Salim Mohammed Assgaf: Plant Protection Dept., Agri. Res. Station, Sieyun, Hadhramout. Agri. Res. & Ext. Authority, (Yemen). salim.assgaf@yahoo.com).

RESEARCH HIGHLIGHTS

EGYPT

Application of actinomycetes as biocontrol agents in the management of onion bacterial rot diseases. This study was conducted to achieve biological control for the post-harvest onion bacterial rot diseases with the aid of Egyptian isolates of actinomycetes. In this respect, 45 actinomycetes strains were isolated from Egyptian soils and screened for their antagonistic effect against onion bacterial rot pathogens; *Erwinia carotovora* subsp. *carotovora* and *Burkholderia cepacia*. The most two active strains were identified based on their cultural, morphological and molecular properties as *Streptomyces lavendulae* HHFA1 and *Streptomyces coelicolor* HHFA2, the latter was most potent and so was used *in vivo* (pots and field) for controlling onion bacterial rot. *S. coelicolor* HHFA2 application resulted in enhancement in the photosynthetic pigments and some foliar growth parameters of onion plants confirming its growth promoting effect. The results of the post-harvest estimation of the disease incidence (DI) of the onion bacterial rot throughout storage revealed that, the application of *S. coelicolor* HHFA2 reduced the DI pronouncedly comparing with the untreated control and confirm its successful role in the biological control of onion bacterial rot diseases. [M.E. Abdallah, S.A. Haroun, A.A. Gomah, N.E. El-Naggar & H.H. Badr (Egypt). Archives Of Phytopathology And Plant Protection, 46(15):1797-1808, 2013].

Biological aspects and life tables of the predacious mites, *Typhlodromips swirskii* (Athias-Henriot) and *Euseius scutalis* (Athias-Henriot) feeding on two scale insect species and plant pollen. Biological aspects and life table parameters of the predacious mites, *Typhlodromips swirskii* (Athias-Henriot) and *Euseius scutalis* (Athias-Henriot) (Acari: Phytoseiidae) consuming eggs of the Maskell scale insect, *Insulaspis pallidula* (Green) and the red date scale insect, *Phoenicococcus marlatti* Cockerell (Homoptera: Diaspididae, Phoenicococcidae) as well as pollen grains of date palm, *Phoenix dactylifera* L. were determined under laboratory conditions. The life cycle and pre-oviposition period of *T. swirskii* were the shortest, while the oviposition period and female longevity were the longest as well as the egg production was the highest when fed on pollen compared with eggs of *I. pallidula* and *P. marlatti*. On the other hand, the life cycle, pre-oviposition and oviposition periods as well as the female longevity of *E. scutalis* were the best when devoured *P. marlatti* followed by pollen and *I. pallidula*. However, the total and daily fecundity of *E. scutalis* were the highest after consuming pollen compared with eggs of *P. marlatti* and *I. pallidula*. The sex ratio of females to total in the progeny of *T. swirskii* and *E. scutalis* was the highest when consumed *I. pallidula* followed by pollen and *P. marlatti*. Life table parameters were the most favourable for *T. swirskii* and *E. scutalis* feeding on date palm pollen compared with eggs of *I. pallidula* and *P. marlatti*. [G.M. Abou-Ellella, S.A. Saber & S.A. El-Sawi (Egypt). Archives Of Phytopathology And Plant Protection, 46(14): 1717-1725, 2013].

Biochemical effects of chlorpyrifos organophosphorous insecticide, camphor plant oil and their mixture on *Spodoptera littoralis* (Boisd.). The biochemical effects of the chlorpyrifos organophosphate insecticide and camphor plant oil in addition to their combination were studied and compared against the fourth larval instars of the cotton leaf worm *Spodoptera littoralis* under laboratory condition. Biochemical analysis showed that the total protein content of the cotton leaf worm larval instars was decreased at 31, 26 and 13.5% by using a camphor extract, chlorpyrifos and combination, respectively. In addition, the activity of acid phosphatase, α -esterase was significantly declined. Biochemical analysis also showed that the alkaline phosphatase activity was increased comparing with control in another side. Acetylcholinesterase enzyme amount and activity were increased with the treatment of

camphor extract followed by chlorpyrifos, even though the mixture of them nearly showed the same amount in control trail. In contrast, chitinase enzyme showed a negative effect of both camphor and chlorpyrifos with nearly about the same lowering in the amount and activity of chitinase, while the mixture of them revealed a high positive increasing in the amount and activity of chitinase. On the opposite trend, phenoloxidase enzyme of treated larvae increased by action of chlorpyrifos, followed by camphor, while the mixture of them showed a negative decrease when comparing with the control. [Badr El-Sabah A. Fetoh & Khalid A. Asiry (Egypt and Saudi Arabia). Archives Of Phytopathology And Plant Protection, 46(15): 1848-1856, 2013]

Comparative Efficacy of Garlic Clove and Castor Seed Aqueous Extracts Against the Root-Knot Nematode, *Meloidogyne incognita* Infecting Tomato Plants. A greenhouse experiment using aqueous extracts of garlic (*Allium sativum*) cloves and castor bean (*Ricinus communis*) seeds, to control root-knot nematode, *Meloidogyne incognita* on tomato cv. Super strain B, was conducted. The plant materials were diluted with distilled water; the concentration was 10 g/100 ml. Four-week old tomato seedlings were planted in pots and arranged in a completely randomized block design for a treatment of five replicates. Approximately 2,000 juveniles of root knot nematode were pipetted around each plant. The botanical extracts were either soil drenched or foliar sprayed, for each pot. Cadusafos 10G (Rugby) as a nematicide, and non-treated pots served as the control. Results showed that tomato is susceptible to *M. incognita* infection. Botanical extracts were more effective and significantly ($p \leq 0.05$) reduced nematode criteria including number of galls and egg masses on roots of tomato and number of juveniles in roots and soil, compared to nematicide and non-treated plants. In general, a high dilution of the tested materials caused higher increases in lengths and weights of shoots and numbers and weights of fruits than those occurred by a low dilution. [El-Nagdi W.M.A.-E., Youssef M.M.A. (Egypt). Journal of Plant Protection Research, 53(3): 285-288, 2013].

Effect of abiotic resistance inducers, γ -amino-*n*-butyric acid (GABA), ascorbic acid and chitosan on certain enzyme activities of eggplant inoculated with root-knot nematode, *Meloidogyne incognita*. Treatments with γ -amino-*n*-butyric acid (GABA), ascorbic acid (vitamin C) and chitosan by foliar spray or root dipping technique to eggplant growing under greenhouse

conditions before and after inoculation of *Meloidogyne incognita* showed a generalised increase in the activity of the enzymes, peroxidase (POX), polyphenol oxidase (PPO) and chitinase as compared with the infected non treated control. The maximum increase in POX activity occurred after 10 days of nematode inoculation. The relative PPO activity with chitosan at 2500 ppm, GABA at 5000 ppm and ascorbic acid at 10 ppm using root dipping was found to be 375, 338 and 175% of control, respectively. As for PPO oxidase, the maximum activity was observed after five days of nematode inoculation by using ascorbic acid at 10 ppm followed by GABA at 5000 ppm and chitosan at 2500 ppm by root dipping (800, 767 and 600% of control), respectively, while the highest chitinase enzyme activity (281% of control) was observed using chitosan at 2500 ppm after 10 days of inoculation. [H.A. Osman, M.M.A. Youssef, A.Y. El-Gindi, H.H. Ameen, N.A. Abd-Elbary & A.M.S. Lashein (Egypt). Archives Of Phytopathology And Plant Protection, 46(15): 1857-1863, 2013].

Effect of Cabbage (*Brassica oleracea*) leaf Residues as a Biofumigant, on Root Knot Nematode, *Meloidogyne incognita* Infecting Tomato. Under greenhouse conditions, crushed cabbage leaves (*Brassica oleracea*) were incorporated into the soil at different rates (2.5, 5 and 10g per pot), 10 days before transplanting tomato cv. Super Strain B. The crushed leaves were mixed in with the soil at different interval times (5 g at transplanting, and 5 and 10 days before transplanting) for managing root knot nematode, *Meloidogyne incognita*. Results indicated that adding different rates of crushed cabbage leaves significantly ($p \leq 0.05$) affected nematode criteria. The higher the rate of residue, the higher the percentage of nematode reduction. Adding a moderate rate (5 g) of crushed cabbage leaves reduced nematode criteria according to the time the leaves were added before transplanting. There was a negative correlation between the time of the addition and the percentage of nematode reduction. Also plant growth criteria improved according to the tested rates and the time the leaves were added. [Mahmoud Mohamed Ahmed Youssef, Asmah Mohamed Shawky Lashein (Egypt). Journal of Plant Protection Research, 53(3): 271-274, 2013].

Effect of chlorfluazuron and pyriproxyfen on the antennal morphology, pheromone production and response of surviving adults of *Tribolium castaneum* treated at the LC₅₀ level during the pupal stage. Initial experiments were

carried out to determine the dosage mortality response of the rust-red flour beetle *Tribolium castaneum* to two insect growth regulators, the chitin synthesis inhibitor chlorfluazuron and the juvenile hormone analogue pyriproxyfen. The response was measured as the proportion of adults developing from individuals treated during the pupal stage. For males, at the LC₅₀ level, chlorfluazuron was more toxic than pyriproxyfen with LC₅₀ values of 10.6 and 12.6 ppm respectively. For females, pyriproxyfen was more potent than chlorfluazuron with LC₅₀ values of 7.1 and 8.3 ppm. Subsequent experiments were carried out using adults that had survived after treatment at the LC₅₀ level during the pupal stage. Both responses to pheromone and the production of pheromone, by adults of both sexes that had been treated during the pupal stages with pyriproxyfen, were significantly more affected than those treated with chlorfluazuron. Both treatments caused abnormalities in the antennae of adults of both sexes. [Reda F.A. Bakr, Olfat M. El-Monairy, Nehad M. El-Barky, Nancy M.B. El-Shourbagy. (Egypt and Saudi Arabia). Journal of Stored Products Research, 55: 78-83, October 2013].

Formulation of *Bacillus* spp. and *Pseudomonas fluorescens* for Biocontrol of Cantaloupe Root Rot Caused by *Fusarium solani*. The aim of this study was to evaluate the different carrier formulations of antagonistic bacteria on incidence of root rot disease of cantaloupe. Twenty-seven isolates of bacteria isolated from rizosphere cantaloupe plants (collected from different localities of the Assiut Governorate, Egypt) were tested *in vitro* against the growth of *Fusarium solani*. The tested isolates exhibited varied percentages of mycelial inhibition of *F. solani*. The highly antagonistic bacteria isolates were identified as *Bacillus subtilis*, *Bacillus cereus*, and *Pseudomonas fluorescens*. The effect of talc based powder and wood flour as various carrier formulations of antagonistic bacteria were tested on incidence of cantaloupe root rot disease in greenhouse and field experiments. All tested carrier formulations of antagonistic bacteria significantly decreased the disease index percentage ($p > 0.05$) of root rot disease compared with the control, in greenhouse or in field experiments. Application of the wood flour formulation to the infested soil at the time of planting, gave the lowest disease (21.75%) index percentage compared to an application fifteen days before planting (26.83%). The reverse effect occurred in the case of the talc based powder formulation application. In field experiments, during the two growing seasons of 2009 and 2010,

wood flour formulation gave the same effect in the reduction of the disease index when added before planting or at the time of planting to soil infested with the pathogen. However, application of the talc formulation at the time of planting showed the least disease index compared to when it was applied fifteen days before planting. In general, wood flour formulation significantly decreased the disease index when compared with the talc formulation. In all the formulations, a number of viable colonies of bioagents were decreased gradually by prolonging the storage time at 4°C. Storage time was prolonged up to five months. But in the case of *B. subtilis* on talc and *B. cereus* on wood flour formulations, storage time needed to be prolonged up to seven months. [Sallam N.A., Riad S.N., Mohamed M.S., El-eslam A.S. (Egypt). Journal of Plant Protection Research, 53(3): 295-300, 2013].

Sublethal Effects of Spinosad (Tracer®) on the Cotton Leafworm (Lepidoptera: Noctuidae).

The effects of sublethal concentrations of spinosad (Tracer®) on development, fecundity, and food utilization, in the cotton leafworm, *Spodoptera littoralis* (Boisd.) were investigated. The fourth-instar larvae were fed on castor bean leaves treated with LC₂₅ (13.9 ppm) or LC₅₀ (57.8 ppm) of spinosad. Pupation and pupal weight were significantly reduced in both LC₂₅ and LC₅₀ treatments, compared with those of the controls. The fecundity rates of females in either LC₂₅ or LC₅₀ treatment were also reduced, compared with the controls. The residual activity of spinosad, applied on cotton at labeled field- and subfield-rates (200 and 70 g active substance (a.s.) / 200 l water, respectively), was examined against the fifth-instar larvae of *S. littoralis*. Feeding deterrent effects were significantly demonstrated in larvae that fed on leaves collected from field plots with residual deposits of spinosad at 3 and 7 days old after application (DAA). The residual activity of spinosad on feeding and other metabolic parameters was decreased after 21 DAA indicating that the chemical started to degrade under field conditions. A histological study on midgut from larvae that previously fed on leaves treated with a concentration corresponding to the labeled-field rate of spinosad showed some alterations occurred after 48 and 96 h of treatment, compared to the normal midgut from the controls. The histological alterations included degeneration in the epithelial lining of the midgut and in the peritrophic matrix. Such histopathological effects are presumed to be responsible for the reduction in growth and food utilization caused by spinosad. It is, therefore, concluded that spinosad has sublethal effects on *S.*

littoralis that may affect population dynamics in the field via reductions in survival and reproduction. [Abouelghar G.E., Sakr H., Ammar H.A., Yousef A., Nassar M (Egypt). Journal of Plant Protection Research, 53(3): 275-284, 2013].

IRAN

Screening of onion seed sets for resistance against new Iranian isolates of *Fusarium oxysporum* f. sp. *cepa*. Root and basal rot disease (RBR) of onion, *Fusarium oxysporum* f. sp. *cepa* (FOC), is one of the most important diseases, which cause tremendous losses in onion-growing areas worldwide. In this survey, various onion genotypes, including eight main and dominant Iranian seed sets and two exotic ones, were tested against FOC incidence in greenhouse and field conditions of various growing stages. The incidence of the RBR was determined at three stages, such as early, flowering and seed-setting stages, on the basis of disease severity. The genotypes reacted differentially to FOC within and between various stages with a very high significant level. The genotypes were classified in five scoring scales, accordingly. Highly infected ones tended to be associated with the highest mean scores of 75–100% severity and the least infected genotypes had the lowest scores of 0–10%. Moreover, the examined genotypes were ranked from 1 to 10 according to their markedly differing reactions to FOC at various stages. Variance and cluster analysis also showed similar results among the genotypes with various levels of infections. There was a direct, positive and enhancing correlation for every genotype to infection as the growing stages were reaching to the maturing stage. [Mehdi Nasr Esfahani, Mansoureh Hosseini, Abbas Nasehi & Elham Golkhandan (Iran). Archives Of Phytopathology And Plant Protection, 46(15): 1864-1873, 2013].

MOROCCO & BELGIUM

Quantitative detection of the root-lesion nematode, *Pratylenchus penetrans*, using qPCR. *Pratylenchus penetrans* is one of the most economically damaging plant-parasitic nematodes and is found on a wide variety of crops. Correct identification and quantification of this nematode are necessary for providing advice to farmers, but are not easily obtained with the traditional way of microscopic observation. We developed a qPCR assay to detect and quantify *P. penetrans* in a short but accurate manner. A qPCR primer set, including two primers and a TaqMan probe, was designed

based on the sequence of the β -1,4-endoglucanase gene. The assay was optimized by using the primers in a qPCR assay with SYBR green I dye and setting the qPCR program to different annealing temperatures ranging from 60 °C to 64 °C. Based on the Ct-values, we retained the program with an annealing temperature of 63 °C. The assay with the probe was very sensitive as it was able to detect a single individual of *P. penetrans*, even when mixed with up to 80 individuals of *P. thornei*. The specificity of the reaction was confirmed by the lack of amplification of DNA from 28 populations of 18 other *Pratylenchus* species and from plant-parasitic nematodes from nine other genera. DNA from 21 different isolates from *P. penetrans* was amplified. DNA extraction from 80 individuals and quantification by qPCR was repeated four times; Ct-values showed consistent results ($Ct = 24.4 \pm 0.4$). A dilution series from DNA of *P. penetrans* resulted in a standard curve showing a highly significant linearity between the Ct-values and the dilution rates ($R^2 = 0.99$; slope = -3.23; E = 104 %). The tests showed a high correlation between the real numbers of nematodes and the numbers detected by the qPCR. The developed qPCR assay provides a sensitive means for the rapid detection and reliable quantification of individuals of this pest. This method does not require expertise in nematode taxonomy and morphology, and can be used as a rapid diagnostic tool in research, as well as in diagnostic labs and extension services advising farmers for pest management. [Fouad Mokrini, Lieven Waeyenberge, Nicole Viaene (Turkey). European Journal of Plant Pathology, 137(2): 203-213, October 2013].

OMAN & UAE

Disinfestation of stored dates using microwave energy. This study was conducted to determine the mortality of two common insect species in stored dates using a microwave oven operating at 2450MHz. Adults of *Tribolium castaneum* (Herbst) and *Oryzaephilus surinamensis* (L.), and larvae of *T. castaneum* (15 days) were used to internally infest stored un-pitted dates and then subjected to microwave treatment at 180, 300, 600 or 800W power for 20, 30 or 40s. Complete mortality was achieved for adults of both insects and larvae of *T. castaneum* when the power was 800W and the exposure time was 30 or 40s. Mortality of *T. castaneum* larvae was also 100% when the power and exposure time were 600W and 40s, respectively. The quality attributes of the microwave-treated dates (in which 100% mortality

was achieved) were compared with untreated dates. Instrumental evaluation of texture profiles revealed that microwave disinfestation did not affect hardness, adhesiveness, springiness, cohesiveness and chewiness. Microwave disinfestation did not affect the sensory attributes or the surface color of date fruits. The moisture loss during microwave treatment was between 1.0 and 1.5 percentage points. Further investigations are required to determine the capability of microwave disinfestation for packed dates and other stored product insects and life stages. [A. Manickavasagan, P.M.K. Alahakoon, T.K. Al-Busaidi, S. Al-Adawi, A.K. Al-Wahaibi, A.A. Al-Raesi, R. Al-Yahyai, D.S. Jayas. (Oman). Journal of Stored Products Research, 55: 1-5, October 2013].

PAKISTAN

Diagnostic tools using DNA barcoding for the identification of pathogen races and related species: a review. In the past, disease diagnostic has been an art which was based on visual scoring of disease symptoms. However, visual scoring was cumbersome and often confusing for the pathologists due to intermingling of the visual symptoms with other diseases, delayed appearance of symptoms or symptoms matching with nutrient deficiencies. As an alternative of visual scoring, several other methods were proposed such as microscopy to visualise the pathogen directly or to quantify the pathogen through enzyme linked immunosorbent assay. These techniques were associated with slow rate of analysis per sample and often were culture based. This led to the development of culture-independent DNA-based molecular techniques. These DNA-based molecular techniques have the potential for rapid, sensitive detection and accurate quantification of pathogens. Since a plant may be infected by the multiple pathogens, these techniques could also identify the number of pathogens by multiplex assay technique. In this manuscript, four different DNA-based techniques are reviewed which show that these are now routinely being used in diverse crop species for diversity, detection and diagnostic analyses of pathogens. [Zafar Iqbal, Saeed Rauf, Imran Hamid, Salman Ahmad & Muhammad Akbar Anjum (Pakistan). Archives Of Phytopathology And Plant Protection, 46(14): 1707-1716, 2013].

Insecticides for control of the diamondback moth, *Plutella xylostella* (L.) (Lepidoptera: Plutellidae) in Pakistan and factors that affect

their toxicity. The diamondback moth, *Plutella xylostella* (L.), is one of the most destructive insect pests of crucifer crops in Pakistan and other parts of the world where crucifers are grown. It has displayed an ability to develop resistance to most insecticides rapidly due to a range of biochemical and behavioral factors. Two factors affecting toxicity of insecticides, host plants and insecticide synergists, were assessed under laboratory conditions. The LC_{50} values of different insecticides varied significantly and feeding by *P. xylostella* on different host plants sometimes significantly affected their toxicity. Against *P. xylostella* collected in Pakistan, the insect growth regulator chlorfluazuron was the most toxic compound (LC_{50} of 0.0006 mg a.i. ml^{-1}) and dimethoate was the least toxic (LC_{50} of 76.6 mg a.i. ml^{-1}). Feeding on different hosts significantly affected toxicity of some insecticides. For example, when larvae were fed rocket plants, *Eurica sativa*, the LC_{50} of λ -cyhalothrin was 0.105 mg a.i. ml^{-1} whilst it was 0.035 a.i. ml^{-1} when larvae were fed cabbage, *Brassica oleraceavar. capitata*. The LC_{50} values of lufenuron, profenofos, λ -cyhalothrin, spinosad and avermectin alone were 1.14, 8.67, 0.0418, 0.37, and 0.013 mg a.i. ml^{-1} , respectively. With some, but not all insecticides, a low but sometimes significant level of synergism was recorded with use of the synergists piperonyl butoxide and S,S,S-tributyl phosphotriothioate. [G.H. Abro, T.S. Syed, A.N. Kalhor, G.H. Sheikh, M.S. Awan, R.D. Jessar and A.M. Shelton (Pakistan and USA). Crop Protection, 52: 91-96, October 2013].

Phylogenetic analysis of coat protein gene of BYDV-MAV strain from wheat. Barley yellow dwarf disease is globally the most important viral disease of wheat. The full-length nucleotide sequence of coat protein (CP) gene of 12 isolates revealed the presence of three distinct clusters. Pakistani isolate of MAV (MAV-PK) has maximum similarity of 99.23% with MAV isolate of Morocco and PAV-Australia following 99.22 and 99.22% with PAV-France. Similar degree of similarity was found in comparison of amino acid sequence. The finding of this study is that MAV-PK has similarity with both MAV-France and PAV-Australia, which is due to the reason that both MAV and PAV belong to the same group and both share maximum nucleotide homology. Low genetic diversity was found not only between MAV isolates but also between MAV and PAV isolates because phylogenetic analysis was done on the CP gene which is highly conserved region in genome of *Barley yellow dwarf viruses* (BYDVs). Divergence in MAV-PK was due to this

recombination which is now most prevalent in Pakistan. MAV-PK has maximum similarity with MAV-Morocco followed by MAV-Sweden and MAV-Cz, which seems to indicate that Pakistani isolate of MAV evolved as the result of recombination between MAV isolates of the USA and PAV isolates of Australia and France. At the same time, recombination of MAV-CZ and MAV-Sweden also occur. This work can be successfully utilised in epidemiological studies of MAV isolate in Pakistan. Further analysis of variation level in these isolates will help scientists to formulate appropriate management strategies like incorporation of BdV 2 gene in wheat against BYDVs. [Kamran Saleem, Shahid Hameed & Irfan Ul-Haque (Pakistan). Archives Of Phytopathology And Plant Protection, 46(14): 1747-1755, 2013].

SAUDI ARABIA

Assessing the impact of areawide pheromone trapping, pesticide applications, and eradication of infested date palms for *Rhynchophorus ferrugineus* (Coleoptera: Curculionidae) management in Al Ghowaybah, Saudi Arabia.

The red palm weevil, *Rhynchophorus ferrugineus* (Olivier) (Coleoptera: Curculionidae) is a highly destructive pest of date palms, *Phoenix dactylifera* L. (Arecaceae), in Saudi Arabia. Data spanning a six year period (2007–2012) from Al Ghowaybah, a 1104 ha date producing region in the Al Ahsaa Directorate in Saudi Arabia, were analyzed to assess the impact enhanced management efforts that commenced in Oct. 2009 had against this pest. Within six months of initiating the areawide management program significant reductions in the mean monthly number of weevils trapped and percentage traps with *R. ferrugineus* were detected. Mean monthly trap captures of *R. ferrugineus* and the percentage of traps capturing weevils declined significantly from 2009 to 2012 by an average of 65% and 90%, respectively, indicating that trapping and dispersal pressure was significantly reduced. By 2011, average monthly trap captures and percentage of traps with *R. ferrugineus* were significantly lower than all pre-management capture data and this was maintained through 2012 when data collection ceased. Additionally, over the period 2010–2012, insecticide application and palm eradication rates dropped by 91% and 89%, respectively. The total number of *R. ferrugineus* captured in 2012 declined by 86% when compared to total captures for 2010. At the end of 2012, the estimated infestation rate of date palms in Al Ghowaybah was 0.36%, which was below the economic

threshold of a 1% infestation rate set by the Directorate of Agriculture supervising the program. It is concluded that the mandatory areawide management program that commenced in Oct. 2009 against *R. ferrugineus* in Al Ghowaybah had a significant and rapid impact against this pest. [M.S. Hoddle, Abdul Hadi Al-Abbad, H.A.F. El-Shafie, J.R. Faleiro, A.A. Sallam, C.D. Hoddle (Saudi Arabia). Crop Protection, 53: 152-160, November 2013].

SYRIA

Mass Production of the Fungus *Trichoderma harzianum* as Granular Formulation in Syria.

The fungus *T. harzianum* was isolated locally in 2005 and compared with the commercial imported product (Biocont). The results showed the superiority of local isolates over imported one, for that the best isolate among local once was cultured on several organic materials to select the optimal one for mass production of the fungus. A series of experiments involving effectiveness, dosage, concentration, form of application and duration of storage were conducting before the adoption of the final formulation of the product of the fungus, which is currently distributed to farmers. *T. Harzianum* (Moniliaceae : Moniliales: Deuteromycete) is one of the most important species of the genus *Trichoderma* and it is used for biological control of plant diseases. This fungus used successfully in biological control of: *Armillaria*, *Botrytis*, *Fusarium*, *Monilia*, *Plasmopara*, *Pythium*, *Rhizoctonia*, *Sclerotinia*, *Verticillium* and *Sclerotium* because of its properties in Competition, Biofertilization and stimulation of plant defense mechanisms, Rhizosphere modification, Antibiosis, Mycoparasitism and Inactivation of the pathogen's enzymes. we started to distribute this formulation since 2010 to date and production of it is increasing year after year. Recently we are working on preparing a wettable powder formulation of the fungus for foliar application. [Amal Haj Hassan (Department of pathogens, Lattakia center for rearing natural enemies, Lattakia, Syria). E-mail: amal.haj@gmail.com].

TUNISIA

Insecticidal activities of essential oils from some cultivated aromatic plants against *Spodoptera littoralis* (Boisd). Medicinal plant species were tested for their fumigant activity against *Spodoptera littoralis* third instar larvae. Responses varied according to plant species and parts used.

For the present investigation, volatile oils were obtained from: *Foeniculum vulgare* (flowers and seeds), *Coriandrum sativum* (seeds), *Daucus carota* (flowers), *Pelargonium graveolens* (leaves and flowers), *Origanum majorana* (leaves and flowers), and *Salvia officinalis* (leaves). Fumigant activity was observed after 24 hours of exposure. All essential oils were proved to be toxic to the third instar larvae. However, the highest mortality was observed in the essential oil of *S. officinalis* leaves, *C. sativum* seeds, *F. vulgare* seeds, *D. carota* flowers, and *O. majorana* leaves with LC50 = 23.050 µl/l air, 68.925 µl/l air, 95.075 µl/l air, 99.300 µl/l air, and 100.925 µl/l air, respectively. Other oils showed an LC50 between 101 and 183 µl/l air. [Souguir S., Chaieb I., Cheikh Z.B., Laarif A. (Tunisia). Journal of Plant Protection Research, 53(4): 389-391, 2013].

TURKEY

A novel phytoplasma associated with witches' broom disease of *Ligustrum ovalifolium* in Turkey. California privet (*Ligustrum ovalifolium* Hassk.) plants exhibiting leaf yellowing, witches' broom, dieback and decline symptoms were observed for two years (2010–2011) in three gardens at Adana region (Turkey). DNA isolated from symptomatic and healthy plants was used to amplify 16S rDNA fragments by direct and nested-PCR. Phytoplasmas were detected in 21 symptomatic plants, out of 30 samples collected, whilst no PCR amplifications were obtained from asymptomatic plants. BLAST analysis of the 16S rDNA showed that the phytoplasma found in *L. ovalifolium* from Turkey, denoted as Turkish *Ligustrum* witches' broom phytoplasma (TuLiWB), most closely resembled members of group 16SrII (peanut witches' broom group) and shared up to 92 % sequence identity. Based on in silico 16S rDNA RFLP analysis and automated calculation of the pattern similarity coefficient, TuLiWB showed molecular characteristics different from all previously described phytoplasma species to represent a new taxon. Similar indication also emerged from the phylogenetic tree which allocated it in a novel discrete subclade within the phytoplasma clade. This is the first report on the presence of a phytoplasma affecting *L. ovalifolium* and whether this novel phytoplasma is the same agent reported as a mycoplasma-like organism (MLO) and associated with witches' broom disease of *Ligustrum* in Korea (1989) is yet to be determined. [Behçet Kemal Çağlar, Toufic Elbeaino (Turkey).

European Journal of Plant Pathology, 137(1): 113-117, September 2013].

Distribution and Taxonomy of Gomphocerinae (Orthoptera, Acrididae) Species in the Anatolian Black Sea Basin and Check List of Turkey Subfamily Fauna. This study was carried out especially between 2003 and 2006, at different altitudes and habitats, and 5244 Gomphocerinae specimens were collected in Black Sea Regions to determine subfamily species ranging between 200 meter and 2460 meter in 175 different localities in this area. These specimens were prepared according to standard methods in the laboratory, then researched and compared with present literature, acoustics characteristics, museum specimens determined before, and specimens researched. Finally, 52 species belonging to 17 genera of the Gomphocerinae subfamily along with present literature were indicated in the Black Sea Region. Eight of 52 Gomphocerinae subfamily species were collected for the first time from the Black Sea Region and with previous studies totally 60 Gomphocerinae subfamily taxon are distributed in this area. In addition to these, *Dociostaurus (Kazakia) tartarus* has been given a new record for Turkey. Original description name, printed journal, distributions for world, and variations, if existed, were given for every genus and species. By checking over previous studies, check list for Gomphocerinae subfamily fauna of Turkey was prepared, and evaluated in terms of taxonomic, faunistics, and biogeographic terms. [Abbas MOL, Unal Zeybekoglu (Turkey). Journal of the Entomological Research Society, 15(2): 69-102, 2013].

EUROPE, NORTH AFRICA and MIDDLE EAST

Natural enemies of the South American moth, *Tuta absoluta*, in Europe, North Africa and Middle East, and their potential use in pest control strategies. The South American tomato leafminer, *Tuta absoluta* Meyrick (Lepidoptera: Gelechiidae), is an invasive Neotropical pest. After its first detection in Europe, it rapidly invaded more than 30 Western Palaearctic countries becoming a serious agricultural threat to tomato production in both protected and open-field crops. Among the pest control tactics against exotic pests, biological control using indigenous natural enemies is one of the most promising. Here, available data on the Afro-Eurasian natural enemies of *T. absoluta* are compiled. Then, their potential for inclusion in sustainable pest control packages is discussed

providing relevant examples. Collections were conducted in 12 countries, both in open-field and protected susceptible crops, as well as in wild flora and/or using infested sentinel plants. More than 70 arthropod species, 20% predators and 80% parasitoids, were recorded attacking the new pest so far. Among the recovered indigenous natural enemies, only few parasitoid species, namely, some eulophid and braconid wasps, and especially mirid predators, have promising potential to be included in effective and environmentally friendly management strategies for the pest in the newly

invaded areas. Finally, a brief outlook of the future research and applications of indigenous *T. absoluta* biological control agents are provided. [Lucia Zappala', Antonio Biondi, Alberto Alma, Ibrahim J. Al-Jboory, Judit Arno', Ahmet Bayram, Anar's Chailleux, Ashraf El-Arnaouty, Dan Gerling, Yamina Guenaoui, Liora Shaltiel-Harpaz, Gaetano Siscaro, Menelaos Stavrinides, Luciana Tavella, Rosa Vercher Aznar, Alberto Urbaneja&Nicolas Desneux. Journal of Pest Science, 86(4): 635-647, December, 2013].

❖ Some Plant Protection Activities of FAO and Other Organizations

DESERT LOCUST SITUATION

Situation level: Caution

General Situation of the Desert Locust during October 2013 and Forecast until mid-December 2013 provided by the FAO Emergency Center for Desert Locust (ECLO).

Locust numbers increased and small hopper bands formed in several countries during October. The situation remained the most serious in Yemen as swarms formed in the interior where control operations were not possible, moved to the Red Sea and Gulf of Aden coastal plains, and laid eggs that hatched and hoppers formed groups and small bands. Some infestations extended to adjacent areas of Saudi Arabia. An outbreak developed in Mauritania where hopper and adult groups and small bands formed in the west and northwest. Locusts were concentrating in Niger and formed groups and bands in the interior of Sudan. Control operations were undertaken in all of the affected countries. During the forecast period, locusts will concentrate and could form a few small groups in northern Mali, Niger and Chad as vegetation dries out. Locust numbers will increase further in west and northwest Mauritania and in the winter breeding areas along both sides of the Red Sea where hopper groups and bands are likely to form. A few small swarmlets may form in Yemen and Mauritania.

Western Region. An outbreak developed within an area of about 120,000 km² in west and northwest Mauritania where adults arrived from summer breeding areas in the south, concentrated, matured, and formed groups. Good rains allowed egg laying to continue from September. Hatching occurred during October and hoppers formed small groups and bands. Ground teams treated nearly

3,000 ha. As breeding continues, locust numbers are expected to increase further, leading to the formation of groups, bands and perhaps a few small swarmlets. There is a high possibility that infestations may extend into southern parts of Western Sahara. In Niger, small-scale breeding continued mainly on the Tamesna Plains and, by the end of October, adults were concentrating and becoming *transiens* as vegetation started to dry out. In Chad, small-scale breeding caused an increase in adult numbers and a few small groups could form as vegetation dries out in November.

Central Region. Locust populations shifted from the summer to the winter breeding areas during October. The situation deteriorated further in Yemen as swarms formed in the interior and moved to the coastal plains of the Red Sea and Gulf of Aden and laid eggs in areas where hopper groups and bands had already formed from September breeding. Only limited control operations could be carried out. In Saudi Arabia, hopper and adult groups were treated in the interior along the Yemen border, and small-scale breeding occurred on the central Red Sea coast. In late October, adult groups arrived on the southern coastal plains near Jizan from Yemen. In Sudan, hopper and adult groups and a few hopper bands formed in the summer breeding areas of the interior as vegetation dried out. Adult groups moved to the northeast where breeding was already in progress and to the Red Sea coast. Good rains fell in late October in northeast Sudan and southeast Egypt. Locust numbers will continue to increase along both sides of the Red Sea with hatching in November that will lead to the formation of groups and small hopper bands. A few small swarmlets could form in Yemen in December. Elsewhere, local breeding occurred in eastern Ethiopia where good rains fell, and isolated adults were present in northern Oman.

Eastern Region. The situation remained calm during October. Locust numbers continued to decline as vegetation dried out in the summer breeding areas along both sides of the Indo-Pakistan border. No significant developments are likely during the forecast period.

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>).

MASS REARING TRAINING AND SURVEILLANCE OF NATURAL ENEMIES OF *TUTA ABSOLUTA* IN LEBANON

Training seminars on mass rearing of natural enemies of *Tuta absoluta* and field survey of natural enemies were held in the framework of the FAO project TCP/RAB/3402: Management of Tomato Borer: *Tuta absoluta* in Near East Region. The trainings targeted the staff of the National Plant protection Organization (NPPO), the head of 28 twenty eight agriculture centers as well as researchers from Lebanese agriculture research institute (LARI) from the MoA in Lebanon. Forty nine participants attending the workshop were drawn from the Plant Protection, agricultural centers and Research.

The seminars included lecture/presentations, assessment of the Lebanese Agricultural Research Institute facilities for mass rearing of natural enemies and surveying natural enemies from and around tomato fields in different areas from the country and how to mass rear these natural enemies. *Macrolophus spp.* was the most frequent mirid found in Lebanon during the surveillance on tomato and *Dittrichia*.

Based on the trainings, it is recommended to start mass rearing and promoting the production of this local strain of *Macrolophus spp.* and to develop its study especially to check if it is a non-diapause strain. This mirid has shown very good performance in the crop, and seems to be less dangerous than *Nesidiocoris tenuis* against tomato crop because of phytophagy.

Moreover, surveying the natural enemies within and around the fields of farmers in the FFS will be conducted during the following months; collection of these NE will be gathered and a trial of rearing these NE will be commenced.



TOT TRAINING COURSE ON FFS/TOMATO IPM IN JORDAN

A ToT training course was convened by the Ministry of Agriculture in Jordan in cooperation with the FAO. The workshop was held under the framework of the FAO TCP project TCP/RAB/3402 on management of Tomato Borer (*Tuta absoluta*) in the Near East Region. The project started in 2013 and covers five countries in the Region.

The objectives of TOT training were:

- To train new FFS facilitators about establishing and manage successful FFS,
- Empower the participants on IPM tactics, insect zoo, disease triangle, etc,
- Reinforce the main principles/elements of the FFS approach,
- Describe the importance of the IPM field study,
- Provide field exercises to be conducted by the FFS.
- Data record and monitoring of the FFS.



Around nineteen professional participated in this training course, majority of them were from the tomato growing areas.

The three days training course was held during September 29th till October 1st 2013 in Amman with a field day conducted in a farm in Al-Baqaa area.

TRAINING WORKSHOP ON RED PALM WEEVIL IPM IN YEMEN

The inception and training workshop on Red Palm Weevil IPM in the framework of the FAO Project TCP/YEM/3404 on the “Assistance to Control the Red Palm Weevil infestation in Yemen” was organized during 2-4 December in cooperation with the MAI. The workshop aimed at officially launching the TCP project, discussing the current status of the RPW, developing action plan to be implemented in the targeted governorates and training the project core team on the pest monitoring and management.

The programme of the workshop encompassed presentations on the morphology, biology of RPW and damage symptom, management of RPW and role of pheromone trapping in the management of RPW. Twenty five trainees “core technical team of the project” were acquainted on the most recent IPM strategy (Best Practices) adopted for the management of RPW in date palm worldwide. The participants in the workshop got several doubts clarified on various aspects of RPW control, including pheromone trapping, chemical control, validating RPW-IPM programme, quarantine protocols etc. in addition, the participants apprised on using GPS/GIS for pest survey with reference to the management of RPW.



The presentation session was followed by hands on training on pheromone trap fabrication.

The TCP project aims at containing the infestation of the RPW that has been reported at the end of May 2013 in Al Qaten area in Hadramout Governorate; preventing its spread to other date

palm cultivated areas; implementing a country-wide surveillance programme to monitor the pest and ultimately eradicating the pest in such limited spread of the infestation.

THE IPPC REGIONAL WORKSHOP FOR THE NEAR EAST AND NORTH AFRICA REGION

The Annual Regional Workshop of the International Plant Protection Convention (IPPC) was organized by RNE and the Secretariat of the International Plant Protection Convention (IPPC) in collaboration with the Near East Plant Protection Organization (NEPPO) and the National Office for Food Safety (ONSSA), Morocco. The workshop was held during the period 28 October – 1 November, 2012 in Agadir, Morocco.



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 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). In addition, the country representatives were updated on how to actively participate in the standard setting process and the progress in the standard setting process, issues emerged from the Eight Session of the Commission on Phytosanitary Measures (CPM-8) held this year April 2013 and other developments and topics related the Phytosanitary and the IPPC, among them the Invasive Alien Species and the IPPC.

Five draft ISPMs were reviewed during the workshop, of which, three drafts for new standards related to:

- Minimizing pest movement by sea containers,
- Movement of growing media in association with plants for planting in international trade,
- Management of phytosanitary risks in the international movement of wood;

One draft amendment to the ISPM 5 (Glossary of phytosanitary terms) and one draft annex to ISPM 26 “Phytosanitary procedures for fruit fly (Tephritidae) management”.

A technical seminar on the threat of the Citrus Greening (Huanglongbing (HLB) Disease) on the Near East and Mediterranean citrus production was held as a side event during the last day of the workshop. The seminar aimed at sharing experience among infested countries in the region (three countries so far), and mainly raising the awareness on serious threat of the cure-less Citrus Greening disease on the citrus production among the disease free countries in the region. The countries were urged to apply appropriate phytosanitary measures and mobilize their resources to prevent the introduction of the disease to their countries taking into consideration that the region is one of the biggest producers of the citrus in the world.

International experts from different regions (*COSAVE, Argentina; OIRSA; MoA, KSA; Canary Islands; Spain*) have been invited to present their experience with the disease in their respective regions/countries.

Beside the countries’ representatives from 18 countries in the region, many researchers, plant protection professionals and fruit and vegetable procedures from Morocco attended the seminar.

TRAINING WORKSHOP ON THE APPLICATION OF THE ISPM-15 DOHA, QATAR, AUGUST, 2013

The FAO Regional Office for the Near East and North Africa in cooperation with the Ministry of Environment (MoE) in Qatar had organized a training workshop on the application of the international standard for phytosanitary measures (ISPM-15) on regulation of wood packaging material in international trade.

The workshop was held at the premises of the Directorate of the Agricultural Affairs at the MoE. The workshop provided an overview presentation on the IPPC and standard setting process, and a comprehensive presentation on the

ISPM-15: its scope, requirements, approved treatments methods, application of the ISPM-15 mark and status of the registration of the ISPM-15 mark. Around 15 participants from the Plant Protection and Quarantine Department attended the workshop.

During the workshop, a visit took place to some wood treatment facilities to assess their compliance with the requirements of the ISPM-15. In addition the manual on standard operating procedures (SOPs) for application of the ISPM-15 at national level, prepared by the Plant Protection and Quarantine Department in Qatar has been reviewed and discussed.



❖ Short plant protection notes

- Based on research and observation, exotic pathogens are said to be a safe and useful tool for weed control, especially in natural areas rich in valued non-target species. -> J. Barton, Jane.Barton@ihug.co.nz.
- Climate change is already being blamed for increasing multiple pest outbreaks in *Manihot esculenta* (cassava) across South-east Asia, according to a recent report. See: tinyurl.com
- Trial results for using entomopathogens in soil-less media in greenhouse and nursery production found that using peat moss, recycled plant material, or hardwood bark produced optimum impacts. -> A.L. Nielsen, Nielsen@aesop.rutgers.edu.
- Field appraisals and individual interviews conducted in western KENYA revealed that farmers viewed *Striga hermonthica* (witchweed) as a major constraint to cropping, but also rejected control methods as too risky with no guaranty of direct crop yield increase. -> K. Itoh, KItoh@people.kobe-u.ac.jp.
- The world's main pesticide manufacturing/marketing firms "continue to invest in biopesticides," according to a report in the 30 September 2012 issue of Crop Protection Monthly at www.crop-protection-monthly.co.uk.

❖ GENERAL NEWS

ESA INTERNATIONAL BRANCH 2014 ANNUAL MEETING

Call for Presenters

Please check for more details and deadlines
www.ECE2014.com

Two Session proposals for the Xth (10th) European Congress of Entomology (ECE 2014) in York, United Kingdom (UK), August 3-8, 2014. The International Branch has been approved to participate in the Royal Entomological Society's 10th European Congress of Entomology (ECE 2014) in York, United Kingdom, August 3-8, 2014. During the event, the ESA (Entomological Society of America) International Branch will have two symposia and its business meeting.

Below are the two symposia that have been accepted. We are looking for presenters:

1. **Managing *Rhynchophorus ferrugineus*: A global Challenge.** Aziz Ajlan, Khalid Alhudaib, Jose Romeno Faleiro

2. **IPM: A challenge strategy on invasive insect species.** Aziz Ajlan

Please let us know if you plan to attend this meeting, and forward you're abstract along with your full name and title as soon as possible if you are interested. Please email to Aziz Ajlan. At present the ECE does not have an "official" form for collecting talk titles and abstracts. It will be available soon.

Postgraduate student speakers are eligible to apply for assistance from the Society to attend the meeting:

NEW VACANCY (ASSISTANT / ASSOCIATE PROFESSOR: PLANT PATHOLOGY) IN THE COLLEGE OF AGRICULTURAL AND MARINE SCIENCES AT SQU.

The Department of Crop Sciences is seeking a candidate to teach and conduct basic and applied research in the field of Plant Pathology. Experience in teaching and research would be a distinct advantage. The appointee would be expected to teach courses in the field of Plant Pathology, which include: Plant Pathogens, Plant Virology, Integrated Disease Management and other related courses at advanced undergraduate and postgraduate levels and to contribute to basic courses at junior undergraduate level. Positions will remain open until filled, but applications received before 10 of January 2014 will receive priority consideration.

For more details please contact: Dr. Abdullah Mohammed Al-Sadi, Head, Department of Crop Sciences, Sultan Qaboos University, PO Box 34, Al-khod 123, Sultanate of Oman. Email: alsadi@squ.edu.om

PLANT PATHOLOGY AND ENTOMOLOGY CAPABILITY STUDY IN AUSTRALASIA

The Australasian Plant Pathology Society (APPS), the Australian Entomological Society (AES) and the Cooperative Research Centre for Plant

Biosecurity (CRCPB) funded a survey of plant pathology and entomology capability in Australia and New Zealand in 2012. This survey was of similar design to one conducted in 2006, and so allows the identification of important shifts in availability of expertise that will affect planning for future requirements in these disciplines. The survey covered qualifications, specialisation, employment, age structure, skills sought by employers, and concerns of respondents for the future of their profession.

One of the main concerns raised by the survey is that we are getting older, greyer and many are close to retirement. There are potential short falls in expertise in plant bacteriology and plant virology. Of great concern to younger members of the professions is the lack of secure employment, making it difficult to develop expertise in a group of pathogens or a particular crop. These appear to be worldwide trends, not specific to Australia and New Zealand.

The full survey report is at
http://www.appsnet.org/public/survey/APPS_AES_Survey_2012.pdf.

CREATING A PEST ENCYCLOPAEDIA FROM THE UK

The UK Agriculture and Horticulture Development Board (AHDB) has issued a call to develop a new encyclopaedia-style publication on managing pests across arable and field crops.

The proposed encyclopaedia will focus on IPM solutions and act as the recognised reference source on managing pests and beneficials for all growers and agronomists. Results from a 2012 survey of growers and agronomists supported the need to improve knowledge and understanding of pests and beneficials across rotations, thereby prompting the new publication. Proposals to conduct the work must be sent to AHDB. It is planned to launch the publication at "Cereals 2014". See: <http://www.allaboutfeed.net/Process-Management/Feed-Safety/2013/8/UK-Creating-a-pest-encyclopedia-1327035W/>

THE JAKOB ERIKSSON PRIZE FOR PLANT PATHOLOGY IN 2013

The awardee for this prize for 2013 was Professor Jeffrey B Jones of the University of Florida, and full details about him can be seen at <http://plantpath.ifas.ufl.edu/faculty/Jones/faculty-Jones.shtml>. The Prize was presented at an award ceremony at the end of the International Congress

of Plant Pathology in Beijing, China on Friday 30 August 2013. As part of the Ceremony, Dr Jones made a presentation on his work.

The history and procedures for the award of the prize can be seen at Jakob Eriksson Prize for Plant Pathology.

2014 BGRI WORKSHOP AND BORLAUG SUMMIT ON WHEAT FOR FOOD SECURITY

To celebrate 100 years of Dr. Norman Borlaug, the 2014 Borlaug Global Rust Initiative Technical Workshop and the Borlaug Summit on Wheat for Food Security will bring together scientists, thought leaders, policymakers, and representatives of leading agricultural research-for-development organizations, both public and private to Ciudad Obregon, Mexico, from 22 - 28 March 2014. See: Borlaug 100 and Borlaug Global Rust Initiative.

SPECIAL ISSUE OF PHYTOPATHOLOGIA MEDITERRANEA

Josep Armengol Forti <jarmengo@eaf.upv.es> advises that a special issue of *Phytopathologia*

Mediterranea based on the 8th International Workshop on Grapevine Trunk Diseases (8th IWGTD), has been published recently as *Phytopathologia Mediterranea* 52(2).

This issue includes research papers based on presentations given at the 8th IWGTD, held in Valencia, Spain, on 18-21 June 2012. It covers different areas of interest: pathogen detection and characterization, grapevine nurseries, epidemiology, host-pathogen interactions and disease management.

The information contained in this issue represents an advance in the study and understanding of fungal root and trunk diseases of grapevines. See: <http://www.fupress.net/index.php/pm/issue/current>.



THE NEW INTERNATIONAL PEST CONTROL WEB-SITE WENT LIVE IN OCT 2013

The new site is not a replacement for the print / online version of the publication, however there

are some previews of articles published in recent issues as well as complete articles for visitors to read free of charge. The site will be updated with more articles and news from recent and future issues as well other pest control news from around the world. Check out the site at www.international-pest-control.com

International Pest Control Magazine
Reporting on global pest control issues for over 55 years



❖ Arab Society for Plant Protection News

SPECIAL ISSUE OF ANEPPNEL, (NOVEMBER 2013)

The Editorial Board of the Arab and Near East Plant Protection Newsletter (ANEPPNEL) felt the importance of shedding light on the research achievements of graduate students in plant protection sciences in the Arab countries by circulating annually the abstract of their theses/dissertations in a special issue of ANEPPNEL, starting in 2013 to include summaries of their completed work in 2012. The dissemination of such information through the Arab Society of Plant Protection newsletter will make the recently generated knowledge in plant protection accessible to the scientific community in the region and beyond. Through such effort, it becomes possible for all those involved in plant protection research to become well informed about the research problems tackled by colleagues from other universities and by identifying who is doing what. This will facilitate further exchange of information and enhance collaboration among young scientists from different countries. It will also help in avoiding duplication of efforts, when possible. This special issue includes 30 abstracts of thesis and dissertation in different fields of plant protection finished in 2012 in Arab Universities. This issue is available on the website of ASPP: http://www.asplantprotection.org/PDF/ANEPPN/ANEPPNEL_Special_Issue_Nov-13-En.pdf

TENTATIVE SYMPOSIA PROGRAM AND INVITED SPEAKERS FOR THE 11TH ACPP, AMMAN, JORDAN (9-13 NOVEMBER, 2014)

Opening Session Keynote Address

Plant Health Management in the 21st century –issues and responsibilities for plant health professionals.
Speaker: Dr. Greg Johnson, President, International Society of Plant Pathology, Australia.

Symposium I: New Invasive Pests and Phytosanitary Measures for the Arab and Near East Countries and lessons learned from other regions

1. Invasive pests and phytosanitary measures: the case of Europe. Speaker: Dr. Françoise Petter, EPPO, France.
2. Invasive pests in the Mediterranean and Near East region and risks associated with their spread. Speaker: Dr. Stefano Colazza, University of Palermo, Italy.
3. How the Netherlands confronted the introduction of crop bacterial diseases: The case of potato. Speaker: Dr. Jan van der Wolf, Wageningen University, The Netherlands.
4. Huanglongbing (HLB), a critical and invasive disease of citrus: Lessons learned from the USA and China and their applicability to the Arab and Near East countries. Speaker: Dr. Jianchi Chen, USDA, ARS, USA.
5. Importance of accurate and easy to use pest detection methods for use by plant health inspection services. Speaker: Dr. Francesco Spinnelli, University of Bologna, Italy.

Symposium II: Prospects and limitations of novel action pesticides

1. New and safer chemicals for insect pest management. Speaker from Bayer will be announced soon.
2. New developments in chemical disease management. Speaker: Dr. Andy Leadbeater, Syngenta, Switzerland.
3. The role of strigolactones in the biology and control of parasitic weeds: Speaker: Dr. M. Vurro, Bari, Italy.
4. Environmental side effects of novel pesticides. How much are we aware of their limitations? Speaker: Dr. Mohamed T. Ahmed, Egypt.

Symposium III: Pest Management in Organic Farming Systems

- Biological soil disinfestations for the control of soil-borne pests using renewable resources. Speaker: Dr. Adriana Van Bruggen, University of Florida, USA.
2. Development of biopesticides formulations in the Arab region. Speaker: Dr. Walaa El-Sayed, Egypt.

3. Post-harvest disease management in organic farming: integration of strategies. Dr. Davide Spadaro, Agroinnova, University of Torino, Italy.
4. Pest management strategies for organic stone fruit crop production. Speaker: Dr. Fabio Molinari, Italy.

Symposium IV: Natural Compounds and Other Alternatives for Pest Management

1. Plant natural compounds for the control of insect pests. Speaker: Dr. Hari Sharma, ICRISAT, India.
2. Insect pheromones and their application in integrated pest management. Speaker: Dr. Shaker Al-Zaidi, Russell IPM, UK.
3. Effectiveness of bioherbicides on aquatic and land weed systems. Speaker: Dr. Yasser Shabana, Egypt.
4. The use of allelopathic compounds in weed management. Speaker: Dr. Ibrahim Shaaban, Iraq.

Symposium V. Advances in Academic Teaching and Extension to Farmers Appropriate Knowledge for Pest Management

1. How to combine basic and applied research in plant protection to make an impact on farmers lives. Speaker: Dr. Mohamed Khan, North Dakota State Univ., USA.
2. Farmers Field schools for the dissemination of pest management knowledge within farming communities of the Arab and near East countries: successes and limitations. Speaker: Dr. Alfredo Impiglia, FAO, Italy.

Symposium VI. Breeding Strategies for Host Resistance to Invasive and Emerging Pests

1. Durable disease resistance in pome fruit trees. Speaker: Dr. Bruno Le Cam, INRA, Angers, France.
2. Host plant resistance to insect pests: progress made over the past few decades. Speaker: Dr. Mustapha El-Bouhssini, ICARDA, Aleppo, Syria.

❖Publications

NEW BOOKS

Plant Health Sector in Tunisia: Reality, Prospects and Proposition for Fundamental Reform (Arabic)

Author: Prof. Bouzid Nasraoui

A new Arabic book has been issued in March 2013 and entitled "Plant Health Sector in Tunisia: Reality, Prospects and Proposition for Fundamental Reform". This book contains two main parts; the first part deals with the general situation of the plant health sector in Tunisia with its cons and pros stressing specially on its weakness as well as prospects for improvement to which it aspires, the second part concerns a proposition which analyzes the way to overcome weakness and to proceed a fundamental structural reform that enables upgrading this sector to good level fitting in the international standards. This book in 103 pages may be domesticated to do reforms in the plant health system in some other Arabic countries.

The book is distributed for free and to get an electronic PDF version of this book, please email the author at the address <nasraouibouzid2012@gmail.com>.



SELECTED RESEARCH PAPERS

Entomology

New record of *Euplectrus bicolor* (Hym.: Eulophidae) parasitoid of *Spodoptera exigua* (Lep.: Noctuidae). Roya Arbabtafti & Ebrahim Ebrahimi. Archives Of Phytopathology And Plant Protection, 46(15):1885-1894, 2013.

New Taxonomic and Faunistic Data on the Subfamily Euphorinae Förster, 1862 of Turkey (Hymenoptera: Braconidae). Tülin Koldaş, Mitat Aydogdu, Ahmet Beyarslan (Turkey). Journal of the Entomological Research Society, 15(2): 21-35, 2013.

Bacteria

Application of endophytic bacteria for controlling anthracnose disease (*Colletotrichum lindemuthianum*) on bean plants.. [Masoom Gholami, Reza Khakvar & Naser AliasgarZad (Iran). Archives of Phytopathology and Plant Protection, 46(15): 1831-1838, 2013].

Characterization of *Pectobacterium carotovorum* causing soft rot on *Kalanchoe gastonis-bonnierii* in Malaysia. E. Golkhandan, S. Kamaruzaman, M. Sariah, M.A. Zainal Abidin & A. Nasehi (Malaysia). Archives of

Phytopathology And Plant Protection, 46(15):1809-1815, 2013.

***Cocculus hirsutus* extract inhibits the *Xanthomonas oryzae* pv. *oryzae*, the bacterial leaf blight pathogen in rice.** Shivalingaiah, S. Umesha & M.K. Sateesh. Archives of Phytopathology And Plant Protection, 46(15):1885-1894, 2013.

Sensitivity of *Pectobacterium carotovorum* to hydroxytyrosol-rich extracts and their effect on the development of soft rot in potato tubers during storage. Thabèt Yangui, Sami Sayadi, Abdelhafidh Dhoub. Crop Protection, 53: 52-57, November 2013.

Fungi

Associations of biophysical factors with faba bean root rot (*Fusarium solani*) epidemics in the northeastern highlands of Ethiopia. Eshetu Belete, Amare Ayalew, Seid Ahmed (Ethiopia). Crop Protection, 52: 39-46, October 2013.

Determination of genetic and pathological variance among *Tilletia indica* isolates and monosporial lines using PCR based markers and host differentials. Shabana Parveen, M.S. Saharan, A. Verma & I. Sharma. Archives Of Phytopathology And Plant Protection, 46(14): 1683-1695, 2013.

First Report of ‘*Candidatus Phytoplasma solani*’ Strains Associated with Grapevine Bois Noir in Jordan. N.M. Salem, A. Abdeen, P. Casati, D. Bulgari, A. Alma, and P. A. Bianco, (Jordan & Italy). Plant disease, 97(11): 1505, November, 2013.

First Report of *Fusarium chlamydosporum* Causing Damping-Off Disease on Aleppo Pine in Algeria. F. Lazreg, L. Belabid, J. Sanchez, E. Gallego and J. A. Garrido-Cardenas. (Algeria). Plant disease, 97(11):1506, 2013.

Induction of defence-related biochemical changes in okra leaves to powdery mildew disease by several plant-derived agents. Moustafa Hemdan Ahmed Moharam (Egypt). Archives of Phytopathology And Plant Protection, 46(14): 1667-1682, 2013.

Modeling and mapping diversity of pathogenic fungi of wheat fields using geographic information systems (GIS). Ebrahim Zeinvand

LoRESTANI, Behnam Kamkar, Seyed Esmaeil Razavi, Jaime A. Teixeira da Silva. Crop Protection, 54: 74-83, December 2013.

Population Genetic Analysis Reveals Diversity in *Lasiodiplodia* Species Infecting Date Palm, Citrus, and Mango in Oman and the UAE. A. M. Al-Sadi, A. N. Al-Wehaibi, R. M. Al-Shariqi, M. S. Al-Hammadi, I. A. Al-Hosni, I. H. Al-Mahmooli, and A. G. Al-Ghaithi (Oman and UAE). Plant Disease, 97(10): 1363-1369, 2013.

Race analysis of *Puccinia striiformis* f.sp. *tritici* in Iran. The wheat stripe (yellow) rust is one of the most important diseases in Iran. Farzad Afshari (Iran). Archives Of Phytopathology And Plant Protection, 46(15):1785-1796, 2013.

Nematodes

Plant-parasitic nematodes associated with walnut in the Sanandaj region of west Iran. Bahmani J., Khozeini F., Barooti S., Rezaee S., Ghaderi R. (Iran). Journal of Plant Protection Research, 53(4): 404-408, 2013.

Pesticides

Development of new bioformulations using *Trichoderma* and *Talaromyces* fungal antagonists for biological control of sugar beet damping-off disease. Nikoo Kakvan, Asghar Heydari, Hamid Reza Zamanizadeh, Saeed Rezaee, Laleh Naraghi. Crop Protection, 53: 80-84, November 2013.

Effects of inhibitors on haemolymph phenoloxidase from rosaceous branch borer, *Ospherantheria coerulescens* (Coleoptera: Cerambycidae). Gholami T., Ghadamyari M., Oliaee A.O., Ajamhasani M. Journal of Plant Protection Research, 53(4): 324-332, (Iran), 2013

Enhancement of biosurfactants and biofilm production after gamma irradiation-induced mutagenesis of *Bacillus subtilis* UTB1, a biocontrol agent of *Aspergillus flavus*. Hamideh Afsharmanesh, Masoud Ahmadzadeh, Abbas Majdabadi, Farahnaz Motamedi, Keivan Behboudi & Mohammad Javan-Nikkhah (Iran). Archives of Phytopathology And Plant Protection, 46(15): 1874-1884, 2013.

Evaluation of the insecticidal activities of three eucalyptus species cultivated in Iran, against *Hyphantria cunea* Drury (Lepidoptera: Arctiidae). Ebadollahi A. Rahimi-Nasrabadi M.,

Batooli H., Geranmayeh J. (Iran). Journal of Plant Protection Research, 53(4): 347-352, 2013

Field evaluation of imidacloprid and thiamethoxam against sucking insects and their side effects on soil fauna. El-Naggar J.B., Zidan N.E.-H.A. (Egypt). Journal of Plant Protection Research, 53(4): 375-387, 2013

Lethal and sublethal effects of thiacloprid on survival, growth and reproduction of *Helicoverpa armigera* (Lepidoptera: Noctuidae). S. Vojoudi & M. Saber (Iran). Archives of Phytopathology and Plant Protection, 46(15): 1769-1774, 2013.

Methyl bromide alternatives for strawberry and tomato pre-plant uses: A meta-analysis. Anna Belova, Tulika Narayan, Ingram Olkin. Crop Protection, 54: 1-14, December 2013.

Population statistics and biological traits of *Hippodamia riegata* (Goeze) (Coleoptera: Coccinellidae) affected by LC30 of thiamethoxam and pirimicarb. Shima Rahmani, Ali R. Bandani & Qodratollah Sabahi (Iran). Archives of Phytopathology And Plant Protection, 46(15): 1839-1847, 2013.

Protease inhibitor from the crude extract of plant seeds affects the digestive proteases in *Hyphantria cunea* (Lep.: Arctiidae). Aghaali N., Ghadamyari M., Hosseiniaveh V., Riseh N.S. (Iran). Journal of Plant Protection Research, 53(4): 338-346, 2013.

Screening of oilseed rape cultivars relation to diamondback moth, *Plutella xylostella* (Lep.: Plutellidae) in fields of Tehran. Alireza Askarianzadeh, Fatemeh Jahan, Gholamhosein Hasanshahi, Amir Mohammad Naji & Mohammad Salehitabar (Iran). Archives Of Phytopathology And Plant Protection, 46(15):1740-1746, 2013.

Weeds

A review of the effects of crop agronomy on the management of *Alopecurus myosuroides*. P J W Lutman, S R Moss, S Cook and S J Welham. Weed Research, 53(5): 299-313, October 2013.

Are road verges corridors for weed invasion? Insights from the fine-scale spatial genetic structure of *Raphanus raphanistrum*. A Barnaud, J M Kalwij, C Berthouly-Salazar, M A McGeoch and B Jansen van Vuuren. Weed Research, 53(5): 362-369, October 2013.

Yield loss prediction models based on early estimation of weed pressure. Asif Ali, Jens C. Streibig, Christian Andreasen. Crop Protection, 53: 125-131, November 2013.

Vertebrates and other pests

A quarantine protocol against red palm weevil *Rhynchophorus ferrugineus* (Olivier) (Coleoptera: Curculionidae) in date palm. Al-Shawaf A.M., Al-Shagag A., Al-Bagshi M., Al-Saraj S., Al-Bather S., Al-Dandan A.M., Abdallah A.B., Faleiro J.R. (Saudi Arabia). Journal of Plant Protection Research, 53(4): 409-415, 2013.

Bird damage to select fruit crops: The cost of damage and the benefits of control in five states. A. Anderson, C.A. Lindell, K.M. Moxcey, W.F. Siemer, G.M. Linz, P.D. Curtis, J.E. Carroll, C.L. Burrows, J.R. Boulanger, K.M.M. Steensma, S.A. Shwiff. Crop Protection, 52: 103-109, October 2013.

Cuban brown snail, *Zachrysia provisoria* (Gastropoda): Damage potential and control. John L. Capinera. Crop Protection, 52: 57-63, October 2013.

PAPERS WHICH WILL BE PUBLISHED IN THE ARAB JOURNAL OF PLANT PROTECTION (AJPP), VOLUME 31, ISSUE 3, DECEMBER 2013

- Effectiveness of filtrates of local isolates of *Trichoderma* fungi to control different stages of root knot nematode (*Meloidogyne incognita*) under laboratory conditions. Maysa Yaziji, Nada Allouf and Rami Kassam (Syria).
- Improve the efficiency of aphids to screen chickpea germplasm *Bean leafroll virus* (BLRV) and *Beet western yellows virus* (BWYV) resistance. M. Halawan, S.G. Kumari and I. Ismail (Syria).
- Study of the life table of *Zeuzera pyrina* L. at constant temperatures under laboratory conditions. J.A. Ibrahim, A.M. Basher and L.H. Aslan (Syria).
- Relative susceptibility of some lentil genotypes seeds to infection with pulse beetle *Callosobruchus chinensis* L. and its

relationship to seed size and weight.
F.H.M.S. Hallak (Syria).

- Effect of high temperatures on the activity of entomopathogenic nematodes *Heterorhabdites bacteriophora* *in vitro*. M.H. Al-Zenab (Syria).
- Evaluation of the efficacy of *Bacillus thuringiensis* and the insecticide Avaunt or the protection of honey bee wax combs infested by greater wax moth *Galleria melonella* L and its effect on honeybees. R.F. Al-Jassany and H.I. Dawy (Iraq).
- Life table of the cigarette beetle, *Lasioderma serricorne* (F.) reared on dried tobacco leaves. A. Basheer, H. Bilal and A. Saleh (Syria).
- Molecular characterization of some Syrian isolates of *Tomato mosaic virus*. F. Ismaeil, A. A. Haj Kasem, S. Al-Chaabi and A. Abdulkader (Syria).
- The effect of industrial sugars on the females fertility and longevity adult of sunn pest egg parasitoid *Trissolcus grandis* Thomson. W. Dawalibi, M. El Bouhssini, N. Kaaka, S. Khoja (Syria).
- Reaction of some potato cultivars to black dot disease (*Colletotrichum coccodes*) and the effect of the disease and seed category on yield loss. M. Matar, A.A. Alkrj and A.T. Abbas (Syria).
- Use of Oxos, a complex of hydrogen peroxide, acetic acid and silver ions to control scab of potato. K. Tawel and M. Al Fatmi (Syria and Morocco).
- Effectiveness of sublethal concentrations of two pesticides; Buprofezin and Lufenuron on some feeding parameters of the African cotton leafworm. N.M. Mallah (Iraq).
- Comparison of the toxicity of three botanical extracts on the second nymph of the Citrus Mealybug *Planococcus citri* (Risso) under nursery and laboratory conditions. M. Ahmadi and B. Amiri-Besheli (Iran)

EVENTS OF INTEREST

2014

* 03-06 February 2014

Third Conference of Pests management in Sudan, Wad Medani, Sudan. Contact: Prof. Dr. Gamal Abdalla Elbadri, gamal_elbadri@yahoo.com, see: <http://www.arc-cprc.sd>

* 06-09 February 2014

1st African International Allelopathy Congress. Souiss-Tunisia. For further information please contact at E. Mail Address rabiahaouala@yahoo.fr.

* 22-28 February 2014

2014BGRIWorkshop and Borlaug Summit on Wheat for Food Security in Ciudad Obregon, Mexico. For further information please see: <http://borlaug100.org/> and <http://www.globalrust.org/>.

* 01-03 April 2014

17th International Conference on. Biopesticides: Current Status and Future. Prospects. Alexandria, Egypt. See: <http://www.icb.alexu.edu.eg/>

* 16-18 March

5th International Date Palm Conference. Abu Dhabi, UAE. Contact: Prof. Abdelouahhab Zaid (zaid@uaeu.ac.ae).

* 14-18 April

21st Biennial International Plant Resistance to Insects Workshop. Marrakech, Morocco. For more information please see: <http://www.ars.usda.gov/Research/docs.htm?docid=22994>

* 04-09 May

6th International Congress of Nematology. Cape town, South Africa. e-mail: info@6thICN.com. See: <http://www.6thicn.com/>

* 07-09 May

IOBC/WPRS Working Group on Integrated Control in Citrus Fruit Crops. Adana, Turkey. E-mail: Dr. Serdar Satar (hserhat@cu.edu.tr) <http://www.iobcwprscitruswg.org/default.asp>

* 06-10 July

XVI Congress of the International Society of Molecular Plant-Microbe Interactions (IS-MPMI 2014) on Rhodes Island, Greece. Contact: Prof. Eris Tjamos ect@aua.gr, See: <http://www.mpmi2014rhodes-hellas.gr/index.php>

* 13-18 July

Eight International Symposium on Chemical and Non-Chemical Soil and

Substrate Disinfestation. Torino, Italy .
www.sd2014.org

* 27 July-1 August

XIVth International Congress of Mycology, the XIVth International Congress of Bacteriology and Applied Microbiology and the XVth International Congress of Virology in Montreal, Canada. See:
<http://www.montrealiums2014.org/>;
Contact: iums2014@nrc-cnrc.gc.ca

* 03-08 August

10th International Mycological Congress (IMC10). Bangkok, Thailand. Contact: Leka Manoch; e-mail: agrlkm@ku.ac.th

* 09-13 August

APS Annual Meeting in Minneapolis, Minnesota, USA. See:
<http://www.apsnet.org>

* 10-14 August

13th IUPAC International Congress of Pesticide Chemistry. San Francisco, California, USA. Contact info@iupac2014.org, see:
<http://www.iupac2014.org/>

* 17-24 August

29th International Horticultural Congress, “Horticulture - sustaining lives, livelihoods and landscapes”, in Brisbane, Australia. See:
www.ihc2014.org

9-13 November

11th Arab Congress of Plant Protection. Al-Salt, Jordan. Contact: Dr Hazem Hasan,

Secretary of the Organizing Committee acpp@bau.edu.jo, see:
<http://acpp.bau.edu.jo>

18-20 November

9th International Workshop on Grapevine Trunk Diseases in Adelaide, Australia. see:
<http://www.plevin.com.au/iwgtd2014/index.html>

2015

* 24-27 August

XVIII IPPC (International Plant Protection Congress) in Berlin, Germany. See: <http://www.ippc2015.de>

2016

* 24-27 August

XVIII IPPC (International Plant Protection Congress) in Berlin, Germany. See: <http://www.ippc2015.de>

2018

* 29 July – 03 August

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

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