Arab and Near East Plant Protection Newsletter

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ARAB AND NEAR EAST PLANT PROTECTION NEWSLETTER

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

EDITORIAL

Plant Resistance and Its Importance in Agricultural Systems

Plant resistance is one of the most effective tactics in plant diseases management programs, but it still needs to be more effectively utilized. Many of the problems associated with resistance can be overcomed or minimized with additional research, breeding efforts and effective education programs for plant breeders, growers and agricultural extension workers.

Yet, those factors that make the use of resistance an important goal for plant breeders in both modern and classical agricultural systems continuously increase. These factors include: increasing limitations on the use of pesticides, the narrow profit margins for many agricultural systems, lack of grower interest in other management alternatives, and the limited list of available alternatives. Additionally, in many agricultural regions, resistance is among the few management tactics that can be deployed to increase both yield potential and yield stability with little or no additional costs to the producer.

Recently, molecular biology and genetic engineering techniques proved to be effective in producing resistant cultivars to many plant pathogens. It is expected that engineered resistance will help overcome fertility barriers that limit use of some wild sources of resistance, and will provide new sources of resistance to plant pathogens for which no resistance is currently available. However, the major question that arise herein will be whether engineered resistance can be more durable than many currently available resistance genes?. Based on the present knowledge, we must assume that engineered resistance will not be different from wild resistance with respect to durability. Actually, technologies that allow either engineered resistance genes or cloned natural genes to be more readily transferred into a wider range of crop cultivars or even species are now available. Of course, this would very much increase the selection pressure for virulence within the pathogen populations. Consequently, the need for development of sound strategies for management of genetic resistance to plant pathogens will also increase.

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❖ Crop Protection News from Arab and Near East Countries

INVASIVE AND NEW PESTS

EGYPT

First Record of the Sharp Awl Snail, *Opeas pyrgula* (Schmacker and Boettger, 1891) and the Dwarf Awl Snail, *Opeas pumilum* (Pfeiffer, 1840) in Egypt and their Response to Climatic Changes. The sharp awl snail, *Opeas pyrgula* (Schmacker and Boettger, 1891) and the dwarf awl snail, *Opeas pumilum* (Pfeiffer, 1840) (Family Subulinidae) were recorded for the first time in Egypt through this investigation. The first species was collected from plant nurseries at great-Cairo for the first time in September 1996, disappeared in 1997 and occurred again in greater numbers from August 2005. The second snail species was recorded in August 2006. Taxonomy, description, biology and behavior of both snail species and their susceptibility to infection with the snail parasitic nematode, *Phasmarhabditis tawfiki* Azzam were investigated through this work. [K.M. Azzam and M.F.S. Tawfik (Egypt). Egyptian Journal of Biological Pest Control, 21(2): 325-330, 2011].

Rotifers and Ciliates Associated with Egyptian Terrestrial and Aquatic Molluscs and their Effect on *Biomphalaria alexandrina* (Ehrenberg) Snails and their Egg-Masses. The study represents a first record of isolation of some associated rotifers and ciliates from Egyptian terrestrial and aquatic molluscs that represent harmful pests on agricultural plants as well as vectors of some diseases infecting human and animals. Laboratory experiments were conducted to study the effect and pathological symptoms of some rotifers and ciliates on different stages of some aquatic molluscs. Results indicated that rotifers could infect snails and egg-masses of *Biomphalaria alexandrina* (Ehrenberg) causing pathological symptoms. While ciliates showed gregarious predation on embryos in egg masses and newly hatched snails. Effect of both rotifers and ciliates were more rapid and effective on egg masses and newly hatched snails than on mature snails. [K.M. Azzam (Egypt). Egyptian Journal of Biological Pest Control, 21(2): 331-335, 2011].

IRAN

First Report of *Pilidiella granati* Causing Dieback and Fruit Rot of Pomegranate (*Punica granatum*) in Iran. Iran is the largest producer of pomegranate (*Punica granatum*) in the world, with more than 60,000 ha currently in production. In the spring of 2011, a decline and dieback of young pomegranate trees (7 to 10 years old) were observed in the Kheir area of Fars Province. Dieback and twig blight developed toward the lower part of the stem, resulting in death of aerial tree parts and growing suckers from roots. Surface-disinfected tissues of diseased plants were plated on potato dextrose agar (PDA) and malt extract agar media. Isolates were separated into two groups that had either pale green or white aerial mycelia and sporulated after 5 to 7 days at 25°C. Pycnidia were globose and black with thin, membranous, pseudoparenchymatic walls, 80 to 140 µm in diameter. Conidia were hyaline, one-celled, elongate to fusiform, straight, and 11 to 17×4 to 6 µm (average 14×4.7 µm). Cardinal minimum growth temperatures were 8 to 10°C, optimum at 27 to 30°C, and maximum at 35°C. Radial growth rate at 30°C was 8 to 9 mm per day. Representative isolates were deposited in the CBS-KNAW Fungal Biodiversity Centre, the Netherlands (CPC 19625 = CBS 130974 and CPC 19626 = CBS 130975; GenBank JN815312 and JN815313, respectively). Genomic DNA was extracted with the Ultra Clean Microbial DNA Isolation Kit (MoBio Laboratories, Inc., Solana Beach, CA) and the internal transcribed spacer (ITS) region of the nrDNA operon of two isolates were sequenced as described previously. On the basis of morphology, the causal organism was identified as *Pilidiella granati* Sacc. This identification was corroborated by the ITS sequence data, which was identical for both colony types to GenBank HQ166057 (identities = 614 of 614 [100%]). Pathogenicity tests were conducted using two representative isolates from each group on 5-month-old *P. granatum* trees with 10 replicates under greenhouse conditions; 5-mm mycelial plugs from the edge of 7-day-old colonies on PDA were placed under the bark of twig wounds. Uncolonized PDA plugs were used as noninoculated controls. Pathogenicity was also tested on nonwounded fruit by placing colonized 5-mm-diameter mycelial plugs on surface-disinfected pomegranate fruits; noncolonized PDA plugs were used as controls. All treated fruit were placed in plastic bags and maintained at 25°C for 10 days. Isolates were found to be pathogenic on twigs after 2 months, giving rise to brown lesions that were 2 to 5 cm long. No lesions were observed on the controls. Furthermore, the fungus was reisolated from all infected tissues, satisfying Koch's postulates. On pomegranate fruit, the fungus colonized the fruit after 5 to 8 days, followed by the appearance of fruit rot symptoms leading to the formation of abundant pycnidia covering the skin after 10 days. No decay was observed in control inoculations. *Pilidiella granati* has previously been reported as a pathogen of *P. granatum* fruit from Europe, Asia, and the United States. To our knowledge, this is the first report of this pathogen causing dieback and fruit rot of pomegranate in Iran. [M. Mirabolfathy, J.Z. Groenewald and P.W. Crous (Iran & Netherlands). Plant Disease, 96(3): 461, 2012].

IRAQ

Biological Control of the Sunn Pest, *Eurygaster testudinaria* Geoffroy, Using the Fungus, *Fusarium heterosporum* Nees, as a New Entomopathogen in Iraq. Field survey in Najef region, Iraq resulted in identifying a new fungus species, *Fusarium heterosporum* Nees on the Sunn pest, *Eurygaster*

testudinaria Geoffroy. Results indicated that the concentration of $2x10^9$ conidia/ml caused highest mortality (66.67%) 5 days after treatment. [Z.A. Abudal-Razak, N.N. Hama and N. Adnan (Iraq). Egyptian Journal of Biological Pest Control, 21(2): 369-372, 2011].

PAKISTAN

First Report of Ratoon Stunt of Sugarcane Caused by *Leifsonia xyli* subsp. *xyli* in Pakistan. Sugarcane (*Saccharum* hybrids), the second largest cash crop of Pakistan, is planted on 1.029 million ha with an annual production of 50 million tons. During a survey of the sugarcane crop in Faisalabad, Sargodha, and the Dera Ghazi Khan Division of the Punjab Province of Pakistan from 2007 to 2010, symptoms consistent with ratoon stunting, including stunted growth and reddening of the vascular bundles at the nodal regions, was observed on sugarcane cvs. CP77-400, SPF-241, CP72-2086, and NCo-310. CP72-2086 and NCo-310 showed severely stunted growth in both crop cycles. A chemical test was performed for detecting ratoon stunt from the field. Longitudinal sections of mature nodes were treated with a combination of hydrogen peroxide and hydrochloric acid. Healthy canes developed a blue-green color in the parenchymatous tissue around the fibrovascular bundles, diseased cane did not. This field test illustrated that as much as 25% of the plants were infected by ratoon stunt in the survey area. Aerobic bacteria were isolated from a stunted sample (NCo-310) on modified sugarcane medium (17 g of cornmeal agar, 8 g of peptone from soy meal, 1 g of K_2HPO_4, 1 g of KH_2PO_4, 0.2 g of $MgSO_4 \cdot 7H_2O$, 0.5 g of glucose, 1 g of cysteinefree base, 2 g of bovine serum albumin, and 15 mg of bovine hemin chloride) and incubated for 3 to 4 weeks at 28°C. Light, off-white, round, and raised growth bacterial colonies (1.5 to 4.5×0.2 to 0.35 µm). Isolates were positive for the gram and catalase reactions and negative for oxidase, aesculin hydrolysis, urease production, and motility. The pathogen was identified as *Leifsonia xyli* subsp. *xyli* (formerly *Clavibacter xyli* subsp. *xyli*) based on its morphological characteristics. A direct antigen coating-ELISA was developed with antiserum raised against *L. xyli* subsp. *xyli* at the National Institute for Biotechnology and Genetic Engineering, Faisalabad, Pakistan. Infected or suspected to be infected plants of different cultivars were used for an ELISA test. Results showed that sugarcane cvs. NCo-310 (Log 1.342 CFU/ml) and CP72-2086 (Log 0.118 CFU/ml) had higher *L. xyli* subsp. *xyli* titres than the other cultivars tested (SPF-213 [Log 0.071CFU/ml], CPF-237 [Log 0.077CFU/ml], HSF-240 [Log 0.069 CFU/ml], NSG-555 [Log 0.060 CFU/ml], SPSG-26 [Log 0.076 CFU/ml], SPSG-79 [Log 0.074 CFU/ml], SPF-238 [Log 0.057 CFU/ml], and CP77-400 [Log 0.063 CFU/ml]). Cv. SPF-241 (Log 0.107 CFU/ml) was weakly positive for ratoon stunt. Axillary buds of sugarcane were injected via a sterile hypodermic syringe with an 18-gauge needle to deliver a bacterial suspension of 10^9 cells/ml. Inoculated sugarcane plants were examined at intervals over 9 months for the development of symptoms and the presence of bacteria. Cultivars were evaluated on the basis of average number of colonized vascular bundles. SPF-213, CPF-237, HSF-240, NSG-555, SPSG-26, SPSG-79, SPF-238, and CP77-400 were resistant; SPF-241 showed moderate resistance and CP72-2086 and NCo-310 were highly susceptible to ratoon stunt. The pathogen was reisolated from the inoculated plants and identified as *L. xyli* subsp. *xyli* by bacteriological tests and its serological reaction. To our knowledge, this is the first report of ratoon stunt of sugarcane in Punjab Province of Pakistan. [S.-Z. Hussnain, S. Afghan, M.-I. Haq, S.-M. Mughal, A. Shahazad, K. Hussain, K. Nawaz, Y.-B. Pan, A. Batool and A. Irfan (Pakistan & Australia). Plant Disease, 95(12): 1581, 2011].

SUDAN

First Record of a Mycophagous Insect from the Sudan. The powdery mildews caused by the fungi Erysiphales, particularly of the genera *Erysiphe*, *Sphaerotheca* and *Leveillula*, are destructive diseases of various cultivated and wild plants in Sudan during winter season (Decmber-March). According to field surveys the wild plant *Xanthium brasilicum* Vell., locally known as "Ramtouk", was observed to be the most susceptible host to powdery mildews under field condition. Therefore, it acquires the disease early in the season, and shows symptoms for extremely long periods extending mainly to the onset of summer season. Fortuitously, last year different species of insects were found associated with powdery mildew colonies on *X. brasilicum* at Shambat area, Khartoum North. Among such insects large congregations of adults and grubs (different instars) of a coccinellid ladybird, were detected feeding on the fungal mycelia at the lower surfaces of plant leaves. Samples from all stages of the beetle were taken to the laboratory for further investigations. Based on bionomics and illustrations described in literature, the beetle was identified as *Psyllobora bisoctonotata* (Muls.) (Coleoptera: Coccinellidae), a well-known powdery mildew feeder in several countries. This is the first record of a mycophagous insect in Sudan. However, subsequent surveys showed that the insect was not widely distributed among other crops, even on *X. brasilicum* it was found restricted merely to a limited area at the river bank. Thus, the numbers of this predator may be abundant in cold areas with extended winter season, where high disease incidences occur for longer periods, as cited by some authors. Therefore, meticulous bio-ecological studies are important to ascertain the proper habitat for such bioagent, and to evaluate its potential role as a biocontrol factor. Moreover, the study also needs to find out and identify other prevalent mycophagous insects in different parts of the country. [A. Abdelrahim Satti, Environment and Natural Resources Research Institute, National Centre for Research, Khartoum, Sudan, Email: satisattisat@yahoo.com].

Studies on Ecology and Biology of Some Insect Pests of the Mesquite Trees, *Prosopis juliflora* in Sudan. Two coleopteran beetle species; *Alagarobius prosopis* (Brucidae) and *Steraspis speciosa* (Family: Buprestidae) were found feeding on the seeds of the mesquite trees in Sudan. Germination test of infested seeds with *A. prosopis* compared to non-infested ones resulted in 8 and 42% of germination among the infested and non-infested ones, respectively. Larvae of *S. speciosa* fed on the stems of mesquite trees. 1st instar larvae were found under the bark of infested stems. This area of the stem mainly composed of the phloem. The phloem is usually 3 to 4 mm in width and only local damages occurred in the stem, particularly in the parts where the larvae bored. Large pith cells usually contain some stored nutrients and the larvae made large tunnels at the center of the stem feeding on all the pith cells and damaging most of the xylem. The damage to the xylem affected negatively the conduction of water from the roots to the leaves and other parts of the stem and thus caused the browning, drying and death of the infested stems. Highest percentage of infestation of mesquite trees (27.48%) was found at EL Semair farm and the lowest (16.88%) was recorded at Shambat area. EL Rawakeeb area had the highest rate of infestation of mesquite trees by *S. speciosa* (76.97%) compared with the lowest one (71.64%) at Soba. The least infested area with *S. speciasa* was found close to water (2m). At Shambat, the percent of infestation was 36%, while it was 49% at Soba. Trees which grow about (30m) from the water source showed the highest infestation rates 84% at Soba and 78% at Shambat. [K.M. Mawada, Z.A. AL Abjar and A. Eltigani (Sudan). Egyptian Journal of Biological Pest Control, 21(2): 353-359, 2011].

TURKEY

First Report of *Rhizoctonia solani* AG 8 on Wheat in Turkey. A survey was conducted in Ankara and Eskisehir provinces of Turkey for determining anastomosis groups and pathogenicity of *Rhizoctonia* species associated with root and crown rot of wheat. Pathogenicity tests revealed that *Rhizoctonia solani* AG 8 caused the common symptoms of damping-off and stunting. [Fİlİz Ünal and Fatma Sara Dolar (Turkey). Journal of Phytopathology, 160(1): 52-54, 2012].

First Report of Bacterial Canker of Kiwifruit Caused by *Pseudomonas syringae* pv. *actinidiae* in Turkey. A new disease was observed during the spring and autumn of 2009 and 2010 on kiwifruit plants (*Actinidia deliciosa* cv. Hayward) in Rize Province of Turkey. Disease incidence was estimated as 3% in approximately 10 ha. Symptoms were characterized by dark brown spots surrounded by yellow halos on leaves and cankers with reddish exudate production on twigs and stems. Eight representative bacterial strains were isolated from leaf spots and tissues under the bark on King's B medium (KB) and identified as *Pseudomonas syringae* pv. *actinidiae* on the basis of biochemical, physiological, and PCR tests. Bacteria were gram negative, rod shaped, and nonfluorescent on KB; positive for levan production, sucrose and inositol utilization, and tobacco (*Nicotiana tabacum* cv. White Burley) hypersensitivity; and negative for growth at 37°C, oxidase, potato soft rot, arginine dihydrolase, urease, arbutin, erythritol, lactic acid, aesculin hydrolysis, gelatin liquefaction, and syringomycin production. Identity of the eight isolates was confirmed by PCR using *P. syringae* pv. *actinidiae*-specific primers PsaF1/R3 to generate a 280-bp DNA fragment (3). *P. syringae* pv. *actinidiae* reference strain NCPPB 3739, and CJW7 from Jae Sung Jung, Department of Biology, Sunchon National University, Korea, were employed in all biochemical, physiological, and molecular tests as positive controls. Pathogenicity was confirmed by artificial inoculation of 2-year-old *A. deliciosa* cv. Hayward. A bacterial suspension (10^8 CFU ml^{-1}) was injected into kiwifruit twig tips, stems, and leaves with a hypodermic syringe, and the inoculated plants were placed at 25 to 28°C and 80% relative humidity growth chamber for 3 weeks. First symptoms were observed on leaves within 5 days after inoculation and on twigs after 20 days. No symptoms were observed on control plants that were inoculated with sterile water. Reisolation was made from dark brown lesions surrounded by yellow halos on leaves and cankers on twigs and stem and their identities were confirmed using the techniques previously described. All tests were performed three times and pathogenicity tests employed three plants for each strain. To our knowledge, this is the first report of *P. syringae* pv. *actinidiae* causing disease on kiwifruit in Turkey. Kiwifruit production in Turkey has expanded rapidly during the last 10 years (http://www.tuik.gov.tr) and phytosanitary measures are needed to prevent further spread of the bacterium to other kiwifruit orchards. [K.K. Bastas and A. Karakaya (Turkey). Plant Disease, 96(3): 452, 2012].

RESEARCH HIGHLIGHTS

ALGERIA

Determination of Pathotypes and Physiological Races in *Ascochyta rabiei*, the Agent of Ascochyta Blight in Chickpea (*Cicer arietinum* L.) in Algeria. Pathogenic determination of sixteen *Ascochyta rabies* isolates obtained from seven different provinces of western north of Algeria was the aim of this study. The pathotypes and physiological races were determined using seven differential chickpea lines (ILC1929, F8, ICC1903, ILC247, ILC482, ILC3279 and ICC3996). All isolates were classified into three pathotypes and six physiological races according to their aggressiveness and virulence, respectively. We found only one isolate (6.25%) from pathotype I (the least aggressive), 12 isolates (75%) from pathotype II (moderate aggressive) and three isolates (18.75%) from pathotype III (highly aggressive). Four races of *A. rabiei* were determined in this region (races 1, 4, 5 and 6). Races 1 and 2 were established in pathotype I, race 4 was represented by the pathotype II, and pathotype III included the two races 5 and 6, which were virulent isolates. [I. Elkhalil

Benzohra, B. Seddik Bendahmane, M. Labdi and M. Youcef Benkada (Algeria). African Journal of Agricultural Research, 7(7): 1214-1219, 2012].

Efficiency of the Entomopathogenic Fungus *Verticillium lecanii* in the Biological Control of *Trialeurodes vaporariorum*, (Homoptera: Aleyrodidae), a Greenhouse Culture Pest. Our investigation in the region of Jijel revealed that whiteflies are the predominant greenhouses pests; they are polyphagous, moreover, some species can transmit many plant viruses. The treatment method is based on the systematic use of insecticides that have side effects on both the consumer and the farmer. The objective of this study was to evaluate the use of biological control in situ and in vitro as an alternative method by using an entomopathogenic fungus *Verticillium lecanii*. In vitro experiments showed that the fungus was active during all stages of development of the insect, *Trialeurodes vaporariorum* Westwood (Homoptera: Aleyrodidae): Eggs (LD_{50} = 0.59. 107 spores/ml) larvae (LD50 = 0.5. 103 spores/ml) and adults. Our results showed the influence of spore concentration, contact time and relative humidity on the development of the parasite to reach an efficient anti-larval effect of 100%. [M. Bouhous and L. Larous (Algeria). African Journal of Microbiology Research, 6(10): 2435-2442, 2012].

Spatial Distribution of *Geotrogus deserticola* at Tissemessilt Area in North of Algeria. This study describes the allocation and distribution of *Geotrogus deserticola* beetle pest of cereals at the Province of Tissemlesilt (North of Algeria). The examination of infestations revealed seven towns infested on a total of 10, the most heavily infested towns are: Laayoun, Tissemessilt, Ouled Bessam, Khemisti, Maacem, Ammari and Sidi Boutouchent. Moreover, the common Lardjem, Sidi Abed and Beni Chaib, showed no infestation by white grubs. As for the spatial distribution of this pest, the horizon H1seems to be the profile of the most sought by this insect. Strong correlations have been brought out between the biometric variables of this pest in particular its total size, its length and that of head capsules. However, no correlation could be found between this distribution and the physicochemical parameters analyzed. [F. Zohra Milat-Bissaad, F. Bounaceur, H. Cheriet, M. Chenna, M. Abdelli, K. Baba Aissa, K. Moussaoui, N. Chebouti and F. Hoceini (Algeria). Archives of Applied Science Research, 4(1): 388-399, 2012].

Insecticidal Activities of Essential Oils from Leaves of *Laurus nobilis* L. from Tunisia, Algeria and Morocco, and Comparative Chemical Composition. *Laurus nobilis* essential oils from Tunisia, Algeria and Morocco were analyzed for their chemical composition and assessed for their repellent and toxic activities against two major stored product pests: *Rhyzopertha dominica* and *Tribolium castaneum*. The three oils showed quantitative rather than qualitative differences in their chemical compositions. 1, 8-cineole, linalool and isovaleraldehyde, were identified as the major common compounds whereas, α-pinene, α-terpineol, eugenylmethylether, β-pinene, spathulenol and β-myrcene were also well represented in all three oils. Results showed that *L. nobilis* essential oils were repellant and toxic to adults of *R. dominica* and *T. castaneum*. Repellent and fumigant toxicities were highly dependent upon insect species and oil origin. In filter paper tests, *L. nobilis* essential oil from Morocco was more effective compared to Tunisian and Algerian oils. RD_{50} values were respectively 0.013 µl/cm2, 0.036 µl/cm2 and 0.033 µl/cm2 for *R. dominica* versus 0.045 µl/cm2, 0.139 µl/cm2 and 0.096 µl/cm2 for *T. castaneum*. Moreover, fumigant activity tests showed that both *R. dominica* and *T. castaneum* were more susceptible to *L. nobilis* essential oil from Morocco than that from Algeria or Tunisia. The corresponding LC_{50} values were respectively 68, 99 and 113 µl/l air for *R. dominica* against 172, 194 and 217 µl/l air for *T. castaneum*. Our work clearly vindicates interest in the efficacy of essential oils from plants of Mediterranean origin both as insecticides and repellents against stored product pests. [J. Mediouni Ben Jemâaa, N. Tersima, K. Taleb Toudertb and M. Larbi Khoujac (Algeria). Journal of Stored Products Research, 48: 97–104, 2012].

EGYPT

Effect of Preceding and Intercropping Crops on Suppression of Lentil Damping-off and Root Rot Disease in New Valley, Egypt. *Rhizoctonia solani* and *Fusarium solani* were isolated from diseased lentil roots showing damping-off and root rot collected from different locations of New Valley governorate. *R. solani* isolate R-1 and *F. solani* isolate FS-9 were the highest virulent isolates. The influence of some agricultural factors on severity of damping-off and root rot disease was studied under greenhouse and field conditions. Intercropping cumin, anise, onion and garlic significantly decreased damping-off and root rot disease and increased seed yield. Anise has the greater effect than other crops, while intercropping onion showed the lowest effect. All tested preceding crops planted before lentil decreased disease severity and population of the tested fungi except in case of soybean and groundnut which increased percentage of disease severity as well as populations of the tested fungi in soil. Cowpea and gaur cultivated before lentil gave the highest decrease in disease severity. On the other hand, lentil cultivated after cowpea produced the highest seed yield followed by gaur and millet. Lowest seed yield production was recorded when plants were cultivated after soybean followed by sesame and groundnut. The lowest population of *R. solani* was recorded when cowpea cultivated before lentil, while, cultivating sorghum before lentil resulted in the lowest population of *F. solani*. Root exudates of intercropping and preceding crops reduced mycelial dry weight of the tested fungi in vitro except groundnut and soybean. [M.F. Abdel-Monaim and K.A.M. Abo-Elyousr (Egypt). Crop Protection, 32: 41-46, 2012].

Laboratory Studies on *Euseius metwallyi* a Predator of the Spider Mite *Tetranychus urticae* on Fruit Trees in Egypt (Acarina: Phytoseiidae: Tetranychidae). Some biological data of the phytoseiid mite species *Euseius metwallyi* were investigated to evaluate its ability in controlling the two-spotted spider mite *Tetranychus urticae* Koch on certain fruit trees under laboratory conditions of 28±2°C and 74±4% R.H. Adult *E. metwallyi* females were reared singly during their adulthood on apple, apricot, fig, grape and peach leaf discs and provided daily with constant number of *T. urticae* immature stages and adult females (5 preys/predator female). The predator appeared more efficient on *T. urticae* immature stages. Adult female longevity, prey consumption and fecundity were significantly differed between leaves of the tested plants. The longest longevity (15.4 and 16.4 days), the greatest prey consumption (35.2 and 65.2 preys) and the highest fecundity (10.2 and 12.6 eggs) were recorded on peach leaves when feeding on *T. urticae* adult females and immature stages, respectively. On the other hand, the shortest longevity (9.4 and 10.2 days), the lowest prey consumption (21.6 and 34.8 preys) and the least fecundity (3.8 and 4.2 eggs) were recorded on apricot leaves, when predator female fed on *T. urticae* adult females and immature stages respectively. The shortest duration period (4.4 days) and the highest prey consumption (18 preys) of *E. metwallyi* nymphal stages were recorded when feeding on *T. urticae* larvae. Predator female consumed significantly more preys (43.6 preys) and deposited significantly greater number of eggs (14.00 eggs) when feeding on *T. urticae* larvae than other prey stages. These results indicated that, plant leaf surface and prey stage are important factors affecting efficiency of this predator against the investigated prey pest. [El-Sayed M. Mostafa (Egypt). Journal of Entomology, 9(2): 107-114, 2012].

A Trap for Auto-dissemination of the Entomopathogenic Fungus *Beauveria bassiana* by Red Palm Weevil Adults in Date Palm Plantations. A trap was designed to allow red palm weevil adults to pass through it so that they come out contaminated with a high density of the fungus conidia for spreading them amongst the red palm weevil population in date palm plantations. A fungus inoculum containing 10% conidia was prepared and used in the trap. An adult was contaminated with $9.53x10^7$ conidia per a tape visit with a lethal time of 8.25 days. Field trials were carried out using 20 traps in 3 date palm plantations in the period from April 2006 to May 2007 in the Northern Region of United Arab Emirates. Efficacy of the trap was evaluated by assessing the monthly mortality caused with the fungus in the adult population. In the last two months, mortality of adults caused by the fungus in the field population ranged 41.2-51.3% compared with 4.8–4.9% in the control. Results showed that the trap is effective for spreading the fungus *Beauveria bassiana* among *Rhynchophorus ferrugineus* population. [R. El-Sufty, S. Al Bgham, S. Al-Awash, A. Shahdad and A. Al Bathra (Egypt). Egyptian Journal of Biological Pest Control, 21(2): 271-276, 2011).

IRAN

Infection of Alstroemeria Plants with Tomato yellow ring virus in Iran. *Alstroemeria* cv. Ovation plants with virus-like necrotic spots and streaks on leaves and petals were observed in greenhouses in Khorasan Razavi (Mashhad) and Markazi (Mahallat) provinces, Iran. Samples with virus-like symptoms reacted positively in enzyme-linked immunosorbent assay with a polyclonal antibody raised against Tomato yellow ring virus (TYRV) nucleocapsid (N) protein. TYRV-specific primers were used in a reverse transcription-polymerase chain reaction to amplify the N gene. The deduced amino acid sequences of the obtained amplicon revealed 99% identity to the N protein of an isolate of TYRV isolated from tomato (TYRV-t). [N. Beikzadeh, H. Bayat, B. Jafarpour, H. Rohani, D. Peters and A. Hassani-Mehraban (Iran & Netherlands). Journal of Phytopathology, 160(1): 45-47, 2012].

Genetic and Virulence Analysis of *Rhizoctonia* spp. Associated with Sugar Beet Root and Crown Rot in the Northeast Region of Iran. *Rhizoctonia* spp. are the main causal agents of root and crown rot on sugar beet. In this study, isolates of *Rhizoctonia* spp. were obtained from diseased sugar beet in Iran over 2 years. Of 68 isolates, 61 were *R. solani* and 7 were *R. cerealis*. The anastomosis group (AG) of all isolates was determined on glass slides against the testers. Characterization of intraspecific groups (ISGs) of *R. solani* isolates revealed that, of 61 isolates, 43 were AG2-2 IIIB and 18 were AG2-2 IV. Amplified fragment length polymorphism (AFLP) analyses were used to investigate genetic structure of *Rhizoctonia* populations. Principal coordinate plots and cluster analysis differentiated *R. solani* from *R. cerealis* isolates and separated the *R. solani* isolates belonging to different ISGs. AFLP data indicated that the *R. solani* and *R. cerealis* populations are not clonal. Analysis of molecular variance in AG2-2 IIIB isolates showed that geographic region was the main factor determining genetic structure of the populations. Sampling year had no significant effect on the genotypes. Pathogenicity tests on *Beta vulgaris* 'FD0432' revealed that *R. solani* AG2-2 IIIB and AG2-2 IV isolates were more virulent than *R. cerealis*. [P. Taheri and S. Tarighi, (Iran). Plant Disease, 96(3): 398-408, 2012].

Influence of Constant Temperatures on Development, Reproduction and Life Table Parameters of *Encarsia inaron* (Hymenoptera: Aphelinidae) Parasitizing *Neomaskellia andropogonis* (Hemiptera: Aleyrodidae). The Life history and life table parameters of the parasitoid *Encarsia inaron* (Walker) parasitizing *Neomaskellia andropogonis* Corbett were studied at 20, 25, 30 and 32 ºC. Egg-to-adult development time of females ranged from 31.7 days at 20 ºC to 15.0 days at 30 ºC. An average of 305.4 degree-days was required to complete development above the lower threshold temperature (10.8 ºC). Pre-adult survivorship was 80.8, 86.6, 72.5 and 64.4% at 20, 25, 30 and 32 ºC, respectively. Mean longevity of adult

females *E. inaron* ranged from 22.3 days at 20 ºC to 4.5 days at 32 ºC. Mean total fecundity ranged from 12 to 74 eggs/ female. The sex ratio (female %) ranged from 54 to 82%. The intrinsic rate of population increase (r_m) at the different temperatures ranged from 0.113 to 0.203 females/female/day, with the highest value recorded at 25 ºC. These data have implications for commercial rearing of *E. inaron* as well as for understanding its performance when used for the management of *N. andropogonis*. [A. Malekmohammadi, P. Shishehbor and F. Kocheili (Iran). Crop Protection, 34: 1-5, 2012].

IRAQ

Efficiency of Sunn Pest, *Eurygaster testudinaria* (Geaffrov) Egg Parasitoids in Najaf Governorate, Iraq. Efficacy of field releases of the egg parasitoids against the Sunn pest, *Eurygaster testudinaria* (Geaffroy) were investigated during 2007 and 2008 seasons at Al-Kuffa, county wheat fields in Iraq. The results revealed natural presence of the parasitoid species; *Ooencyrtus* sp., *O. telenomicida* (Vassiliev), *Telenomus chloropus* Thomson, *Trisslcus rafiventris* (Mayr) and *Gryon fulvirentre* (Crawford) after about one week from the appearance of the first Sunn pest egg-mass during the month of April. Efficacy of the released parasitoid species was higher in 2008 and reached 13.77, 9.95, 4.07 and 1.67 for *G. fulvirentre*, *T. chloropus O. telenomicida* and *Ooencyrtus* sp., respectively. Parasitism rate was 100% for all parasitoid species at both seasons. Total impact of these parasitoids on the Sunn pest population was 6.92% in 2007 and 28.93% in 2008 and the highest impact was for *G. fulvirentre*. The results depicted that percentage of damaged seeds was reduced to 1.33-2.66% after parasitoids releases. [Z.A.A. Razak and H.F. Alrubeai (Iraq). Egyptian Journal of Biological Pest Control, 21(2): 361-368, 2011].

Using the Parasitoid, *Bracon hebetor* Say. and the Pheromone Traps to Control the Moth Insects, *Ephestia* spp. In Date Stores in Iraq. Lepidopterous insect pests; fig moth *Ephestia cautella*, raisin moth *E. figulilella* and carob moth *E. calidella*, infest dates in date stores. This infestation is the main problem facing date trade in Iraq, especially after inhibiting methyl bromide uses as a fumigant, because it appeared to be ozone depleting agent. The results of using the parasitoid, *Bracon hebetor* Say. And the pheromone traps for controlling the stored product moth insects proved to be highly efficient when they were used together in three simulated date stores in governorates: Baghdad, Karbala and Babylon, Iraq for a period of 5 months. Percentage of preserving dates were 91.6, 96.8 and 85.9% in comparison with 80.7, 76.2 and 73.8%, respectively in date stores in which pheromone traps were used only, with 70.2, 62.5 and 53.2%, respectively for the control stores. The results suggest that the parasitoid, *B. hebetor* and pheromone traps could be recommended to be used for controlling such moth insects. Furthermore, the survey of *Ephestia* spp., using pheromone traps in the date palm orchards of the abovementioned governorates during the year 2010 showed that the average total numbers of catches of *Ephestia* spp. Were 499.4, 419 and 621 insects per trap, respectively. These results are very important for planning to control these insect pests in future using IPM program which should concentrate upon controlling these insect pests in orchards and date stores. [A.A. Hameed, A.A. AL-Taweel, I.J. Al-Jboory and Sh.M. Al-Zaidy (Iraq). Egyptian Journal of Biological Pest Control, 21(2): 377-384, 2011].

LEBANON

Occurrence of Hop Stunt Viroid in Mulberry (*Morus alba*) in Lebanon and Italy. The presence of *Hop stunt viroid* (HSVd) was detected using RT-PCR and Northern blot hybridization in five of 60 samples from symptomless mulberry trees (*Morus alba*) collected in Italian and Lebanese orchards in July 2010. Infection levels were *c.* 10% in Lebanese and 8% in Italian samples. Nucleotide alignments showed that sequences of the mulberry HSVd isolates shared 95–96% identity with those of the same viroid occurring elsewhere. In a phylogenetic tree, mulberry HSVd isolates clustered together with those of HSVd-citrus, regardless of their geographical origin. This is the first report of infection in mulberry trees by HSVd. [T. Elbeaino, R. Abou Kubaa, E. Choueiri, M. Digiaro and B. Navarro (Lebanon, Syria & Italy). Journal of Phytopathology, 160(1): 48-51, 2012].

LIBYA

Survey and Identification of the Egg Parasitoid, *Trichogramma* spp. at El-Gabal Al-Akhdar, Libya. Species of *Trichogramma* in the region of El-Gabal El-Akhdar, Libya were surveyed throughout the period from May to July 2008.The survey included most of the areas cultivated with fruit trees, in addition to few numbers of forest trees and weeds. Results revealed the presence of two *Trichogramma* spp.; *T. bourarachae* and *Trichogramma* sp. in the studied areas. Highest percentage of parasitism (92.75%) was recorded at Darna location on *S. cerealella* eggs, while on *A.* (*E.*) *kuehniella* eggs; it was 20.75% at El-Qoba location. Highest percentage of parasitism (65%) was recorded on *S. cerealella* eggs on grapes while it reached 11% on *A.* (*E.*) *kuehniella* on pomegranate. [K. Al-Salheen, I.I.M. Al-Ghariany and A.S. Breem (Libya). Egyptian Journal of Biological Pest Control, 21(1): 373-376, 2011].

MOROCCO

Antifungal Activity of Some Moroccan Plants Against *Geotrichum candidum*, the Causal Agent of Postharvest Citrus Sour Rot. The powders and aqueous extracts of 43 plant species, harvested in different regions of southern Morocco, were screened for their in vitro and in vivo antifungal activity against *Geotrichum candidum*, the cause of citrus sour rot. Our

results show that among the 43 plants tested, the powders of *Rubus ulmifolius*, *Ceratonia siliqua*, *Cistus monspeliensis* and *Halimium umbellatum* plants totally inhibited mycelia growth of *G. candidum*. Furthermore, the powders of *Cistus villosus*, *Pistacia atlantica*, *Halimium antiatlanticum*, *Inula viscosa*, *Ighermia pinifolia* and *Hammada scoparia* plants are also effective against *G. candidum* with a percent of inhibition of mycelial growth higher than 80%. The effect of plant aqueous extracts on spore germination varied significantly ($P < 0.05$) between tested plants. Aqueous extracts from *H. antiatlanticum* and *C. villosus* plants showed the strongest activity. The first species completely inhibited the spore germination at 2.5 and 5 mg ml^{-1}, and the second species at 5 mg ml^{-1}. The most active plants in in vitro studies were tested in vivo against sour rot on citrus fruit. Incidence of sour rot was lowered to 44.44 and 46.30% when mandarin fruit were treated with *C. villosus* and *H. antiatlanticum* aqueous extracts, compared with 98.15% in the control. This study demonstrates that plants extracts have a high potential to control sour rot of citrus. Such natural products therefore represent a sustainable alternative to the use of chemical pesticides. [I. Talibi, Askarne, H. Boubaker, E.H. Boudyach, F. Msanda, B. Saadi and A. Ait Ben Aoumar. (Morocco). Crop Protection, 35:41-46, 2012].

PAKISTAN

Cloning and Phylogenetic Analysis of Coat Protein of Barley yellow dwarf virus Isolates from Different Regions of Pakistan. *Barley yellow dwarf virus* (BYDVs) is an emerging threat for wheat and may seriously threaten its production, especially as climate change may result in increased infestation by aphids, the insect vectors of the virus. To assess the possibility of using pathogen-derived resistance against the virus, the genetic diversity of BYDVs originating from different wheat-growing areas of Pakistan where its incidence has been higher was investigated. Wheat samples with suspected symptoms of BYDVs were screened for the presence of *Barley yellow dwarf* and *Cereal yellow dwarf viruses* (B/CYDVs) subgroup 1 (*Barley yellow dwarf virus-PAV,* BYDV-MAV, BYDV-SGV) and subgroup II (BYDV-RPV, CYDV-RPV, BYDV-GPV) by PCR using basic multiplex oligonucleotides designed on coat protein (CP) of the virus. Of 37 samples tested, 13 were positive for BYDV subgroup I and only one sample was positive for BYDV subgroup II. Samples positive for subgroup I were further tested by PCR, and results showed that 10 samples were positive for BYDV-PAV and three for BYDV-MAV. DNA sequences of CP region of nine isolates (BYDV-PAV) were determined and compared with available sequences in databases. Sequence analysis showed that three isolates (from Fatehjang, Nowshera and Attock districts) had maximum identity (92.8–94.6%) to BYDV-PAS, and six isolates (from Peshawar, Islamabad Swabi and Faisalabad districts) had maximum identity (99.3–99.7%) to BYDV-PAV. Thus BYDV-PAV species may be dominant in northern wheat-growing areas of Pakistan. The conserved nature of the BYDVs suggests that pathogen-derived resistance strategies targeting the coat protein of the virus are likely to provide protection under field conditions. [N. Naveed Siddiqui, M. Ilyas, S. Mansoor, A. Azhar and M. Saeed (Pakistan). Journal of Phytopathology, 160(1): 13-18, 2012].

Monitoring of Resistance in *Spodoptera exigua* (Lepidoptera: Noctuidae) from Four Districts of the Southern Punjab, Pakistan to Four Conventional and Six New Chemistry Insecticides. The present studies were carried out to evaluate resistance in Pakistani populations of beet armyworm, *Spodoptera exigua* (Hubner) to various insecticides. Different field populations of *S. exigua* from four districts of the Punjab were monitored from 2008 to 2010 for resistance against insecticides using a standard leaf dip bioassay method. For pyrethroids and organophosphates, resistance ratios compared with a susceptible Lab-Pk population were in the range of 7-105-fold for deltamethrin, 12-136-fold for cypermethrin, 20-134-fold for chlorpyrifos and 37-143-fold for profenofos. For new chemistry insecticides, resistance levels were 3-73-fold for spinosad, 5-226-fold for abamectin, 6-88-fold for indoxacarb, 3-75-fold for emamectin benzoate, 2.4-59-fold for lufenuron and 3-41-fold for methoxyfenozide. The pairwise correlation coefficients of LC_{50} values indicated a positive correlation with cross-resistance among deltamethrin, cypermethrin and chlorpyrifos, whereas resistance to profenofos showed correlations with resistances to other insecticides except chlorpyrifos. The new chemistry insecticides showed no correlations among any of the tested insecticides. There were high to very high levels of resistance to organophosphates in most of the populations, which suggested that these should be avoided against this pest. Selective use of pyrethroids in some areas including Multan and Khanewal, where they showed a low level of resistance, would appear to be acceptable. The new chemistry insecticides; lufenuron, methoxyfenozide, indoxacarb and emamectin had no, very low, low and moderate resistance levels for most of the tested populations, respectively. These are also considered to be environmentally safe and safer to natural enemies. Due to these characteristics they could be used in IPM programs supplemented with bio-control agents such as Nuclear Polyhedrosis Virus (NPV), and natural enemies such as parasitoids and predators. Rotation of insecticides with different mode of action where populations have no, very low or low levels of resistance could also be helpful in the management of insecticide resistance in *S. exigua*. [M. Ishtiaq, Mushtaq A. Saleem and M. Razaq (Pakistan). Crop Protection, 33: 13-20, 2012].

SAUDI ARABIA

Evaluation of *Steinernema* sp. SA a Native Isolate from Saudi Arabia for Controlling Adults of the Red Palm Weevil. *Rhynchophorus ferrugineus* (Oliver). *Steinernema* sp. SA a native isolate of

entomopathogenic nematodes (EPNs) was extracted for the first time from naturally infected adult of the red palm weevil (RPW) in Eastern Province in Saudi Arabia. The role of the native isolate in the biological control of RPW adults was evaluated. Laboratory bioassay studies showed high virulence of the nematode to adults of the RPW. Half lethal concentration (LC_{50}) after 3 days was 2077 infective juveniles (IJs)/ml and the half lethal time (LT_{50}) - using the concentration 500 IJ/ml - was 1.95 days. In the Semi-field evaluation *Steinernema* sp SA caused over 97% mortality in adults of the RPW in date palm trees under screen cages. The nematode propagated successfully in all infected insects. In the field, the nematode was sprayed on the basal parts of palm trunks and soil around them. A single spray of $2x10^6$ infective juveniles (IJs)/tree caused 37.16% reduction in RPW population in date palm farms after one week of application. However, the effect was reduced to 34.75% in the following week. [M.M.E. Saleh, M.A. Alheji, M.H. Alkhazal, H. Alferdan and A. Darwish (Saudi Arabia). Egyptian Journal of Biological Pest Control, 21(2): 277-282, 2011].

Effect of the LC_{50} of *Artemisia herba alba* and *Matricaria chamomilla* on Morphological Features of 3rd Larval Instar and Pupa of *Culex quinquefasciatus*. Failure to find out promising new compounds of insecticides has led many researchers back to biodiscovery studies in the search for new and economically viable alternatives. The present work was conducted by exposed 3rd larval instar of *Culex quinquefasciatus* to different concentrations from the two plant extracts; *Artemisia herba alba* and *Matricaria chamomilla* to evaluate their efficacy by determined LC_{50} after a period of exposure for 24 hours following the standard World Health Organization (WHO) insecticide susceptibility methodology. The results indicated that *M. chamomilla* was more effective than *A. herba alba* on both larval and pupal stages after 24 hours. Several effects such as; blocking of metamorphosis and ecdysis, inhibition of adults' emergence, morphogenetic malformations were recorded in larvae, pupae and adults stages. Such malformation and gross morphological features changes were quite similar to those reported for certain insect growth regulators. [A. Abdelkareem Al-Khalaf (Saudi Arabia). Egyptian Journal of Biological Pest Control, 21(2): 385-392, 2011].

SUDAN

Characterization of Sudan Strains of *Bacillus thuringiensis* pathogenic to the larvae of the House Mosquito *Culex quinquefasciatus*. Mosquitoes, as blood sucking insects and vectors for several serious human diseases, continue to be one of the major threats to public health, comfort and economic growth in the Sudan and many other countries. Dengue, yellow fever, and filariasis in addition to malaria are all transmitted by mosquitoes; this pest is controlled using chemical pesticides. The increasing concern about the environment and the hazards resulting from the sole reliance on pesticides and the acquired resistance to one or multiple insecticides forced scientist to seek for safer efficient alternatives or supplements for the chemical pesticides. *Bacillus thuringiensis* is considered to be one of the important microbial control agents capable of producing insecticidal proteins with specific pathogenicity. In this study, different samples were obtained from soils collected from different locations in Sudan and from stored products dust and dead insects, in addition to mosquito rearing bonds, with the objective of isolating entomopathogenic *Bacillus thuringiensis* strains. Thirty nine strains were isolated and identified morphologically and biochemically and their toxicity to the house mosquito *Culex quinquefasciatus* second and third instar larvae was evaluated. The larvae of the house mosquito were introduced to sterile distilled water treated with 500 ppm concentration from each isolate. Significant differences existed between the isolates in their toxicity 42 hours post treatment, where mortality percentages ranged from 25% to 95% compared to 12.5% in the untreated control larvae. About 69% of the 39 Bt isolates were found pathogenic (mortality ≥50%) to the house mosquito larvae. Regression analysis revealed differences in the lethal times between the different isolates. The LT_{50} values varied from 29.38 hours for isolate Om-5 to 131.9956 hours for isolate Gf-18. The practical significance of these findings for management of mosquitoes is discussed. It is therefore concluded that Sudan environment is rich in *Bacillus thuringiensis* pathogenic to the house mosquito and 5 isolates resulted in cumulative mortality percentages above 80%. [Naiema E. Gorashi, Hamadttu A. Elshafie, Hamid A. Hamid and Dirar H. Dirar (Sudan). The 19th Conference of the African Association of Insect Scientists, 9–12 November 2011, Duduville, Nairobi, Kenya. E-mail: naiemaeltayeb@yahoo.com].

TUNISIA

Some Observation on Leafhoppers in Peach Orchards in Northern Tunisia Serious damage caused by cicadellid insects have been observed for a few years in peach orchards in Tunisia. In this study the abundance of cicadellid in peach ecosystem is explored. Population density of cicadas has been measured in orchard, on peach trees, edge trees and weeds. Two trapping techniques were used: sweep net trapping and sticky yellow traps. The quantification of cicadas population on weed species show that Graminacea are most plants containing cicadas, specially *Echinichloa colona* (about 5 cicadas m^{-2}). Cicadas captured on sticky yellow traps on edge shows that *Acacia ebernua* is the most visited species by cicadas. Captured cicadas species in sticky yellow traps deposited in peach canopy show that peach trees are visited essentially by two cicadellidae species: *Asymmestrasca decedens* and *Zygina flammigera*. Dynamics of these two leafhopper species was studied during 2 years. The adults activity begin from February to October with a maximum in June and July. This study constitutes a preliminary observation on peach leafhopper biology in Tunisia and

this is a background for future pest management programs. [I. Chaieb and S. Bouhachem-Boukhris (Tunisia). Journal of Entomology, 9(2): 123-129, 2012].

Sensitivity of *Mycosphaerella graminicola* Isolates from Tunisia to Epoxiconazole and Pyraclostrobin. Fifty two isolates of *Mycosphaerella graminicola* from Tunisia were analyzed for their sensitivity to pyraclostrobin and epoxiconazole in microtitre tests and for mutations in the target genes of the modes of action, cytochrome b and CYP51, respectively. All isolates were highly sensitive to pyraclostrobin, thus no isolate carried the G143A mutation in the cytochrome b gene, the mutation which is the proved mechanism in *M. graminicola* for QoI resistance. The Tunisian *M. graminicola* population was more sensitive to epoxiconazole when compared with European populations based on previously published data. However, some mutations in the CYP51, which are known to be an adaptation response to DMIs have been found in a part of the population (e.g. mutations A379G, I381V), but there is still a portion with wild type isolates, which has already disappeared in Northern Europe. The current data indicate a favourable situation for QoI and DMI sensitivity, but it should be considered in any disease management strategy to include different modes of action to avoid QoI resistance and further adaptation to DMIs. [G. Stammler, K. T. Andreas Koch, J. Haber, B. Liebmann, A. Bouagila, A. Yahyaoui and B. Nasraoui (Tunisia). Crop Protection, 34: 32-36, 2012].

❖ Some Plant Protection Activities of FAO and Other Organizations

DESERT LOCUST SITUATION

General Situation of the Desert Locust during March 2012 Forecast until mid-May 2012

A Desert Locust outbreak continued during March in southwestern Libya and in adjacent areas of southeastern Algeria. Although national control teams in both countries treated 5000 ha of groups of gregarizing adults that were laying eggs, locust numbers will almost certainly increase as hatching occurs and hopper bands form during April, especially in areas that are inaccessible. Scattered adults arriving from northern Niger may augment local populations. All efforts are required to monitor the situation carefully and undertake the necessary control operations to avoid a further escalation in the situation. Elsewhere, the situation remains calm. If more rains fall, small-scale breeding may occur in the spring breeding areas in Southwest Asia but locust numbers will remain below threatening levels.

Western Region - The Desert Locust outbreak that developed in early February in southwest Libya near the Algerian border continued during March. Additional infestations were found in adjacent areas of southeastern Algeria. In both countries, groups of gregarizing adults laid eggs throughout March but hatching was not reported yet. Ground teams treated 3,665 ha in Libya and 1,450 ha in Algeria. It is likely that additional infestations are present in other areas that cannot be accessed along both sides of the border. A second generation of hatching during April is expected to cause locust numbers to increase General Situation during March 2012 Forecast until mid-May 2012 dramatically in both countries. Hatchlings will probably form numerous small groups and bands. From about mid-May onwards, fledgling will occur and small groups of immature adults and swarms are likely to form. Although no locusts were reported elsewhere in the region, low numbers of adults may be present in northern Niger that could move north into southern Algeria.

Central Region - Vegetation continued to dry out in the winter breeding areas along both sides of the Red Sea due to a lack of rain in March. Consequently, only low numbers of solitarious adults were present on the southern coast in Sudan. In northern Oman, isolated adults were seen at a few more places during March as compared to the previous month, and small-scale breeding could occur if rains fall in April. No locusts were seen during surveys in Egypt, Eritrea, Ethiopia and Saudi Arabia. No significant developments are likely during the forecast period.

Eastern Region - Breeding conditions continued to improve during March in parts of the spring breeding areas in western Pakistan and southeastern Iran. Only isolated adults were seen at two places on the coast in Pakistan. During the forecast period, locusts are expected to appear in coastal and interior areas of western Pakistan and southeastern Iran and breed on a small scale if rainfall occurs. Locust numbers will increase slightly but remain below threatening levels. No locusts were seen during routine surveys in Rajasthan, India.

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

REGIONAL WORKSHOP FOR THE GLOBAL REVIEW OF THE PHYTOSANITARY SURVEILLANCE STANDARD (ISPM6) FAO, CAIRO, EGYPT

The Regional Workshop for the Global review of phytosanitary surveillance in the context of the Sixth International Standard of Phytosanitary Measures (ISPM6) was convened in Cairo, Egypt during 16-18/01/2012. The workshop was organized by the FAO Regional Office for the Near East (RNE) with support of the International Plant Protection Convention (IPPC). Thirteen countries from the region have been actively participated in the workshop in addition to the representative of the Near East Plant Protection

Organization (NEPPO) as observer. Other countries have presented their views through the filled questionnaires sent to the RNE and the IPPC Secretariat. The objectives of the workshop were to identify the challenges of contracting parties for implementation of the ISPM 6 and the best practices in application of the ISPM6 in region. The workshop aimed as well at identifying resources for resolving those challenges and gathering necessary recommendations to the review panel of ISPM6 on ways to improve the standard. The workshop has concluded the current situation of application of the ISPM6 in the region and difficulties faced countries for the implementation. The workshop as well emphasized the necessity for preparation of case studies of best practice on the implementation of the ISPM6, manuals, adequate training material and programmes that might help countries to develop their capacity in implementation of the ISPM6.

Group photo for the participants in the Regional Workshop for the Global review of the Phytosanitary Surveillance Standard (ISPM6), FAO, Cairo, Egypt

MANAGEMENT OF RED PALM WEEVIL IN NORTH AFRICA

The Red Palm Weevil (RPW), *Rhynchophorus ferrugineus* Olivier is a most destructive pest of palms causing widespread damage to several palm species in diverse agro-ecosystems world-wide. The RPW is originated from South Asia and currently spread in most of the Near East and Mediterranean countries. This invasive pest moves from one country to another mainly through infested planting material. The pest has been recently reported in three of the Arab Maghreb region. It was first recorded in the region on *Phoenix canariensis* in Tangier, Northern Morocco, in December 2008, later on *Phoenix dactylifera* in Tabrouk, North-East Libya, in January 2009 and in December 2011 on *P. canariensis* in Carthage area North-East Tunisia. The RPW together with Bayoudh disease pose a serious threat to date palm cultivation in the Arab Maghreb region (North Africa) which represent 15% of global date production.

As a response to this real threat, the FAO launched in 2012 a subregional project on RPW management under the FAO Technical Cooperation Programme (TCP) financed by FAO. The project will cover all North Africa Countries (Algeria, Libya, Mauritania, Morocco and Tunisia). The project will be implemented within 2 years timeframe. The objective of the TCP project is to support management/eradication of RPW in infested countries (Morocco, Libya and Tunisia) and to strength capacities to prevent its introduction and spread in other areas in infested countries as well as to other countries non-infested (Algeria and Mauritania).

The inception workshop of the project was organized in Tozeur, Tunisia by the FAO Subregional Office (SNE) for North Africa in cooperation with Tunisian Ministry of Agriculture. During the workshop, the representatives of participating countries have presented the current situation of the RPW and control measures taken so far to control and contain the pest. The country representatives have shared their experiences and knowledge among themselves and with the FAO and international experts involved in the implementation of the project. The national workplans for the implementation of the project in each country were developed; as well as the national and international training programmes were discussed and agreed upon. At the end of the workshop the participants had an opportunity to visit the date palm oases in Tozeur and Nefta areas.

The regional meeting for Management of Red Palm Weevil in North Africa

REGIONAL SYMPOSIUM ON THE MANAGEMENT OF FRUIT FLIES IN NEAR EAST COUNTRIES
Tunisia, 6-8 November, 2012

The FAO is pleased to announce the organization of a Regional Symposium on the Management of Fruit Flies in the Near East and North Africa Region. The symposium will be organized jointly with IAEA, NEPPO, the General Directorate of Plant Protection in Tunisia and the Tunisian Association of Plant Protection. The symposium will be held in Tunisia, during 6-8 November 2012.

The Symposium is intended to address all aspects of the fruit flies management: distribution, biology, damage, phytosanitary measures, management strategies, etc.

The aim of the symposium is to provide a common forum for researchers, regulatory authorities, experts from extension services or advisory bodies and the crop protection industry to share their knowledge on fruit flies management and to identify the gaps in knowledge and research in the region.

The symposium will be convened through the plenary lecture sessions, discussion sessions and a poster session with a field trip.

For more information, please contact Dr. Khaled Al Rouechdi (Khaled.alrouechdi@fao.org) and/or Dr. Nasraoui Bouzid (nasraoui.bouzid@iresa.agrinet.tn).

❖GENERAL NEWS

First Regional Wheat Rust Workshop Erbil, Iraq

A regional wheat rust workshop was held in Erbil-KRG, Iraq during 17-18 October 2011, to discuss and develop a strategy for the control of wheat rust diseases. The workshop was organized by the Ministry of Agriculture (MOA) in Iraq, in collaboration with MOAWR in Kurdistan region and ICARDA, with support from IFAD. More than 55 scientists and high governmental officials representing several institutions, universities, seed companies and ICARDA attended the meeting. The workshop participants presented and discussed the problem and threat of wheat rust at national, regional and global level and its implications on wheat production in Iraq. The final session was a panel discussion and development of the workshop recommendations and a strategy that will confront the disease and reduce its damage to wheat productivity.

Group photo for participants of 1st Regional Wheat Rust Workshop (Erbil, Iraq).

The 3RD Arab Conference of Applied Biological Control of Pests in the Arab Countries (Giza, Egypt)

The Egyptian Society for Biological Control of Pests (ESBCP) regularly organizes an Arabic conference in the field of Applied Biological Control of Pests in the Arab Countries. The 3rd Arab conference was held successfully in Cairo, Egypt during 10-12 October 2011 at the Information Center of the Faculty of Agriculture, Cairo University, Giza, Egypt.

197 members participated in the conference, represented 11 Arab countries, where 74 scientific papers were submitted. The unstable situations in some of the Arab countries during the second half of year 2011 hindered participants from some Arab countries to join the event. At the final session, the participants issued several recommendations to advance the adoption of applied biological control measures in Arab world countries.

In January 2012, ESBCP had published the proceeding of the conference papers presented, reviewed and accepted for publication.

Group photo for participants of the 3rd Arab conference of Applied Biological Control of Pests in the Arab Countries (10-12 October 2011, Giza, Egypt)

Awareness Days on Weeding and Fungal Diseases of Cereals, Algeria

The Regional Plant Protection Services in Algeria have organized during March 2012 several awareness days across several cereal growing districts in Algeria namely; Bouira, Mascara, Saida, Medea, Chlef and Tissemsilt. Participants were reminded about the need for the chemical weed control and the treatment of foliar diseases of cereals, emphasizing the appropriate intervention periods and products to apply.

Demonstration Day on Biological Control Against the Tomato Leafminer in ALgeria

As part of its biological control program, the National Institute of Plant Protection "INPV" in Algeria held on March 28, 2012 a demonstration day for the benefit of tomato growers in the region of "El Ançor" (21 km west of the city of Oran) on the release of the beneficial insect (*Nesidiochorus tenuis*) against the tomato leafminer *Tuta absoluta*. Knowing that the miner is a new pest reported for the first time in Algeria in 2008 and causing significant losses on tomato crops in greenhouses and in the field. Up to now two releases of *Nesidiocoris tenuis* were conducted, one in February 2012 in the area of Fuka (district of Tipaza) and one recently on March 15 in the town of Umm Droua (district of Chlef).

TECHNICAL MEETING ON THE ISSUE OF RED DATE PALM WEEVIL IN ALGERIA

The National Institute of Plant Protection "INPV" in Algeria held on 29 February 2012 at its headquarters in Algiers, a technical seminar on the problem of red date palm weevil. Dr. Metwaly Nabawy, expert from the company "Green World Consulting", presented to the audience the experience of countries in the Middle East and Italy as well as the new equipment used to control this serious pest. It is noteworthy that the monitoring device against the red palm weevil by sex pheromone traps was established at 14 districts in Algeria since 2008. Monitoring focused on the two most sensitive species including date palm "*Phoenix dactylifera*" and the ornamental palm "*Phoenix canariensis*". To date, no outbreaks have been detected.

❖ Arab Society for Plant Protection News

11TH ARAB CONGRESS OF PLANT PROTECTION, 2013, TUNISIA

The Executive Committee of the Arab Society of Plant Protection received a kind invitation from the Tunisian Ministry of Agriculture to host the 11th Arab Congress of Plant Protection (ACPP) in Tunisia during the fall of 2013. The first announcement for the 11th ACPP will be circulated in the near future

DR. KHALED MAKKOUK RECEIVED THE SCIENCE EXCELLENCE AWARD

Under the patronage of the Minister of Education in Lebanon Dr. Hassan Diab, the 18th International Conference of the Lebanese Society for the Advancement of Science (LAAS) was held during the period 22-24 March, 2012 at Notre Dame University (NDU). A large number of scientists, from Lebanon and abroad, participated in this event. Starting in 2008, LAAS annually presented an award of excellence for selected Lebanese scientists for their outstanding achievements in scientific research. The 2012 award went to Dr. Samia Khoury and Dr. Adel Afifi in medical sciences and Dr. Khaled Makkouk in agricultural sciences. The awards were presented during the opening ceremony of the LAAS conference. Dr. Makkouk is a founding member and an ex-president of the Arab Society of Plant Protection, and serves at present as the Editor-in-Chief of the Arab Journal of Plant Protection.

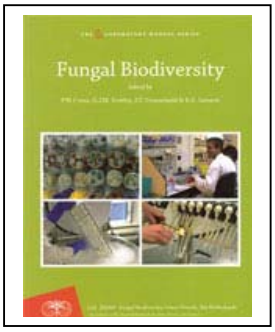
H. E. the Minister of Education Dr. Hassan Diab (center) is presenting the plate to Dr. Khaled Makkouk, standing on the side is Dr. Abdo Jirgis, LAAS president

❖ Publications

NEW BOOKS

Fungal Biodiversity

Edited by P.W. Crous, G.J.M. Verkley, J.Z. Groenewald and R. A. Samson



Fungal Biodiversity focuses on techniques for isolation, cultivation, molecular, and morphological study of fungi and yeasts. It has been developed as a general text, which is based on the annual mycology course given at the CBS-KNAW Fungal Biodiversity Centre (Centraalbureau voor Schimmelcultures). This manual provides an introduction to systematic mycology, starting with a concise treatise of *Hyphochytridiomycota* and *Oomycota,* which have long been subjects of study by mycologists, but are now classified in the Kingdom *Chromista*. These are followed by sections on the groups of "true fungi:" *Chytridiomycota, Zygomycota, Ascomycota*, and Basidiomycota. This descriptive part is illustrated by figures of life cycles and schematic line drawings as well as photoplates depicting most of the structures essential for the study and identification of these fungi. Special attention is given to basic principles of working with axenic cultures, good morphological analysis, and complicated issues for beginners such as conidiogenesis and the understanding of life cycles.

In a chapter on general methods a number of basic techniques such as the preparation and choice of media, microscopic examination, the use of stains and preparation of permanent slides, and herbarium techniques are explained. Further chapters deal with commonly used molecular and phylogenetic methods and related identification tools such as BLAST and DNA Barcoding, fungal nomenclature, ecological groups of fungi such as soilborne and root-inhabiting fungi, water molds, and fungi on plants and of quarantine importance. Some topics of applied mycology are also treated, including fungi in the air and indoor environment and fungi of medical importance. Common mycological terminology is explained in a glossary, with references to illustrations in the book. A chapter providing more than 60 mycological media for fungal cultivation and a comprehensive list of cited references are also provided. The book is concluded with an index and dendrograms reflecting our current understanding of the evolutionary relationships within the Fungi. Sale Price $94.95 and $85.46 Member Price**.**

Virus Diseases of Plants- 2 CDs Set Single User

Edited by O. W. Barnett and John L. Sherwood
Item No: 43702KIT; ISBN 978-0-89054-371-9
$259.00 Price, $233.10 Member Price

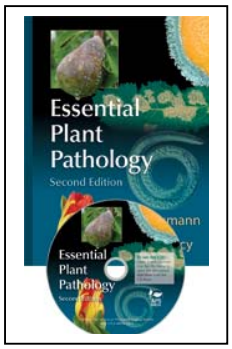
A) VIRUS DISEASES of PLANTS: Image Database Collection CD - contains 1,218 images of symptoms, vectors, viruses, viroids, and also diseases that might be confused with viruses, across a broad range of more than 120 host plants. Each image contains information about the current scientific classification of the virus based on the 8th Report of the International Committee on Taxonomy of Viruses. Names of viruses from images in older APS Compendia have been updated and the newest literature information has been incorporated. Scientists currently working on the crop viruses have written the captions for the images and assisted in editing the compilation.

B) VIRUS DISEASES of PLANTS: Grapevine, Potato, and Wheat Image Collection and Teaching Resource CD - contains an image collection of virus diseases of grapevine, potato, and wheat, plus teaching resources on these crops. More than 430 images are integrated with information about the disease symptoms, epidemiology, causal virus(es), diagnosis, and management. An audiovisual component for each set contains audio narration synchronized with slide shows of all the images. These shows, about forty minutes long each, are designed for classroom presentation or for individual study.

The images on both VIRUS DISEASES of PLANTS CDs are searchable by virus, virus genus or family, plant, symptom, vector, or other words in the captions. The caption for each image contains the symptom description, disease name, virus name, host plant, and image contributor. The images may be easily exported for use in custom presentations and slide shows.

Essential Plant Pathology, 2nd Edition

Edited by Gail L. Schumann



"This is quite simply an excellent book! Bizarrely, this statement in itself fails to do it justice, as this is considerably more than just a book. The DVD tucked in the back cover allows the reader to explore in greater depth case studies, gives access to countless images, tests your understanding of the main topics and provides hotlinks to relevant websites. I have no hesitation in recommending it."

Essential Plant Pathology, Second Edition is completely updated with color throughout and is packaged with a new DVD that includes more extras for students and professors alike. The first edition of this best-selling textbook was carefully reviewed by subject matter specialists and plant pathology course instructors to help update the content, especially some of the quickly changing molecular aspects of host-parasite interactions. This new edition includes an important new section to teach students about gene silencing using RNA interference. The authors did not stray from their highly successful original approach. Imagine a plant pathology textbook that introduces and teaches all the key concepts of the science and is readable in a single semester by each and every student in your class. Essential Plant Pathology achieves that goal because it was written with students in mind.

This inviting new edition is written specifically to the introductory plant pathology course level by award-winning educators, Gail Schumann and Cleo D'Arcy. The book is reader-friendly with important terms and concepts clearly identified. Special "Did you know?" boxes will spark student interest by providing cultural and historical facts about plant diseases and every chapter will guide students to recommended resources, study questions, "Words to Know," Internet research exercises, and DVD exercises.

The new second edition text comes packaged with a dynamic DVD that works hand-in-hand with the popular APSnet Education Center and provides students and their professors with an engaging way to learn and teach plant pathology. This DVD contains many important supplementary materials that can be used without internet access, including: expanded and revised identification exercises, new APSnet Education Center peer-reviewed instructional materials, and new web links for each chapter.

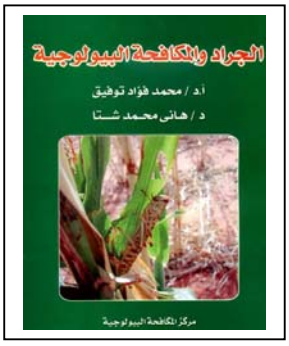
The DVD is a key part of the book because it includes links to all of the enrichment materials from the APSnet Education Center, APSnet feature articles, and links to recommended websites. These are used for the exercises at the end of each chapter. This allows students to learn about diseases and topics of specific interest to them. Also, there are identification exercises for most of the chapters on the DVD. The DVD also includes the illustrated glossary with photos, diagrams and many of the definitions which are not included in the printed version in the book. For instructors, there are high resolution versions of all of the text images.

A printed version of the glossary on the DVD has been added to the textbook which includes synonyms, antonyms, and related terms that will aid students in learning the plant pathology vocabulary. In addition, Appendix 2, which provides disease examples, has been revised to add more tropical crops and diseases for use in chapter exercises.

Item No: 43818; ISBN 978-0-89054-381-$89.95
Price $80.95 Sale Price, $72.86 Member Price

Locusts and Biological Control

Edited by Mohammed Fouad Tawfik and Hany Mohammed Shita (Faculty of Agriculture, Cairo University, Egypt)



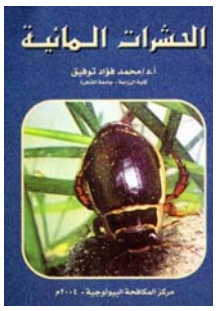
This book presents an overview of the current concerns and projects that are based on biological control, as an important method to manage and control locusts in their reproduction areas, which are sources of the swarms. The content of this book starts providing a summary of locusts, followed by a full view of the biological control. First chapter of the book started with the definition of locusts through external and internal morphological features with reference to the common species in Egypt. Chapter II presented general information about the lives of locusts, especially the desert Locust, in terms of its spread, life cycle, efficiency of flying and the phenomena of solitary and aggregated locusts, impact of the most important host plants on its life and natural factors which limit its activity. Chapter III includes facts concerning the swarms of locusts and their characteristics, origin, locust invasions, original sites, seasonal migration and prevention of swarms formation and invasions. Chapter IV then displays the information on the loss of locusts in some of the countries, its attacks to various agricultural crops, international agenda to combat it and face its problems. Chapter V displays the enemies of locusts, referring to the enemies of insect parasitoids and predators of the embryos and post embryos developing stages and the effectiveness of those enemies, as well as mite enemies, birds, reptiles and mammals. Chapter VI provides the importance of locusts' pathogens in this field, particularly bacterial and fungal pathogens and the importance of preparations of fungal products. Based on what mentioned in the V and VI chapters, chapter VII revealed modern trends of biological control of Locusts, use of its elements and requirements of an integrated program to them. Chapter VIII of this book forms its end with a new method for biological control, referred to biotechnical control, which specializes in self-control techniques of the locusts, use of chemical communication (pheromones), hormones and plant extracts as materials advantage in the fight. The biological control trends, mentioned in this book, have not been so far concerns the right to push it towards the application, which requires a redoubling of efforts to reach this goal (239 Pages).

Aquatic Insects

Edited by Mohammad Fouad Tawfik (Faculty of Agriculture, Cairo University, Egypt)

The first Arabic book, as an introduction to the aquatic insect science to identify, clearly the potential of God in the adaptation of these organisms morphologically, biologically and to live in different

types of aqueous media. The book was launched in the first chapter by facts of water medium, establishment of insects in it, harmonization of the life cycle of insects for living in water and functional harmonization to aquatic life. In the next ten chapters came important information about different groups of aquatic insects, i.e. May flies, stone flies, dragons, water bugs, fish flies, alder flies, Dobson flies, sponges flies, water beetles and aquatic lepidopteran and hymenopteran insects and Cadiz flies. Finally, mosquitoes, hoppers and other aquatic organisms in order Diptera. Special information of each group included facts about morphological characteristics, history of life, modifications of aquatic life, water, habitat and classification of groups at least within each group. The last chapter XII views vectors and their insect predators in the aquatic medium and the role played by these insects for the control against harmful disease vectors to human health. (367 pages).



SELECTED RESEARCH PAPERS

- ✓ **Attempt of wheat protection against *Fusarium culmorum* using Rhizobium isolates.** I. Hmissi, S. Gargouri and B. Sifi (Tunisia). Tunisian Journal of Plant Protection, 6(2): 75-86, 2011.
- ✓ **Biocontrol of blue mold of apple by *Candida membranifaciens* in combination with silicon.** Leila Farahani, Hasan Reza Etebarian, Navazolah Sahebani and Heshmatolah Aminian (Iran). Archives Of Phytopathology And Plant Protection, 45(3): 310-317, 2012.
- ✓ **Biological control of bacterial wilt of tomato by plant growth promoting rhizobacteria.** M.A.A. Seleim, F.A. Saead, K.M.H. Abd-El-Moneem and K.A.M. Abo-ELyousr (Egypt). Plant Pathology Journal, 10(4): 146-153, 2011.
- ✓ **Biological control of common blight of bean (*Phaseolus vulgaris*) causedby Xanthomonas axonopodis pv. phaseoli by using the bacterium *Rahnella aquatilis*.** Nashwa M. Sallam (Egypt). Archives Of Phytopathology And Plant Protection, 44(20): 1966-1975, 2011.
- ✓ **Biological efficacy of *Citrullus colocynthis* L. seed oil against different stages of the two spotted spider mite, *Tetranychus urticae* Koch.** N.A. Jaafar, I.J. Al-Jboory and F.H. Al-Sahaf (Iraq). Arab Journal of Plant Protection, 29(2): 187-191, 2011.
- ✓ **Characterization and laboratory evaluation of efficacy of five isolates of the fungus, *Paecilomyces farinosus* (Holm.) Brown & Smith on Sunn pest overwintered adults *Eurygaster integriceps* Put**. M. Abdul Hai, M. El-Bouhsinni, M. Jamal, B. Barker, M. Sekner and Z. Sayyadi (Syria & USA). Arab Journal of Plant Protection, 29(2): 214-218, 2011.
- ✓ **Characterization of potato and tobacco isolates of Cucumber mosaic virus from Syria and the first report on CMV satellite RNA from potato**. M. Chikh Ali, A.M. Said Omar, T. Maoka, K.T. Natsuaki and T. Natsuaki (Japan, USA & Syria). Phytopathologia Mediterranea, 51(1): 3-10, 2012.
- ✓ **Characterization of stolbur (16SrXII) group phytoplasmas associated with *Cannabis sativa* witches'-broom disease in Iran.** Fereshteh Vali Sichani, Masoud Bahar and Leila Zirak (Iran). Plant Pathology Journal, 10(4): 161-167, 2011.
- ✓ **Comparison of two marks of sex pheromone dispensers commercialized in Tunisia for their efficiency to monitor and to control by mass-trapping *Tuta absoluta* under greenhouses.** K. Abbes and B. Chermiti (Tunisia). Tunisian Journal of Plant Protection, 6(2): 133-148, 2011.
- ✓ **Constitutive expression of thaumatin-like protein (TLP-3) in transgenic tobacco plants leads to enhance resistance to *Alternaria alternata*.** Kamran Safavi, Reza Zareie and Badraldin Ebrahim Sayed Tabatabaei (Iran). Archives Of Phytopathology And Plant Protection, 45(2): 161-169, 2012.
- ✓ **Control of lupine Fusarium wilt by biofumigation with mustard and canola seed meal.** W.I. Shaban, E. El-Barougy and A.H. Zian (Egypt). Tunisian Journal of Plant Protection 6(2): 87-98, 2011.
- ✓ **Control of tomato early blight disease by certain aqueous plant extracts.** Nashwa M.A. Sallam (Egypt). Plant Pathology Journal, 10(4): 187-191, 2011.
- ✓ **Demographic parameters of two spotted spider mite, *Tetranychus urticae* Koch (Acari: Tetranychidae) on cotton.** Nazila Honarparvar, Mohammad Khanjani, Seyed Hamid Reza Forghani, Hadi Ostovan and Ali Asghar Talebi (Iran). Archives Of Phytopathology And Plant Protection, 45(4): 381-390, 2012.
- ✓ **Density-dependent phenotypic plasticity in body coloration and morphometry and its transgenerational changes in the migratory locust, *Locusta migratoria*.** A. Ben Hamouda, S. Tanaka, M.H. Ben Hamouda and A. Bouain (Tunisia & Japan). Journal of Entomology and Nematology, 3(7): 105-116, 2011.
- ✓ **Determination of Onion yellow dwarf virus concentration levels on onion bulb and leaf by double-antibody sandwich enzyme-linked immunosorbent assay (DAS-ELISA).** Mehmet Ali Sevik (Turkey). Archives Of Phytopathology And Plant Protection, 45(3): 339-343, 2012.
- ✓ **Disease buildup with continuous cereal cropping in northern Syria: observations on common root rot (*Cochliobolus sativus*) in long-term crops rotation trials.** S. Ahmed, A. Yahyaoui, J. Ryan and M. Pala (Syria). Arab Journal of Plant Protection, 29(2): 267-272, 2011.
- ✓ **Effect of entomopathogenic fungi *Beauveria bassiana* and *Metarhizium anisopliae* var. *acridum* on the haemolymph of the desert locust *Schistocerca gregaria*.** F.Z. Milat-Bissaad, F. Bounaceur, F. Halouane, N. Behidj, N. Chebouti and B. Doumandji-Mitiche (Algeria). Tunisian Journal of Plant Protection 6(2): 127-132, 2011.
- ✓ **Effect of some biological and biochemical control agents against certain squash pests.** A. A. Abdallah, E. M.A. El-Saiedy, M. M. El-Fatih & M. E. Shoula (Egypt). Archives Of Phytopathology And Plant Protection, 45(1): 73-82, 2012.

- ✓ **Effect of temperature and relative humidity on the rate of development, fecundity and life table parameters of the red spider mite *Oligonychus mangiferus* (Rahman and Sapra) (Acari: Tetranychidae).** Badawi A. Abou-Awad, Mahmoud M. Al-Azzazy and Sahar I. Afia (Egypt). Archives Of Phytopathology And Plant Protection, 44(19): 1862-1866, 2011.
- ✓ **Effect of temperature on the biology and life tables of *Agistemus exsertus* Fed *Tetranychus urticae* (Acari: Stigmaeidae: Tetranychidae) in Hail, Saudi Arabia**. Koloud A. Al-Shammary (Saudi Arabia), Journal of Entomology, 8(6): 557-565, 2011.
- ✓ **Effect of the leaf coating mite *Cisaberoptus kenyae* Keifer (Acari: Eriophyidae) on the mineral content of the host mango plant *Mangiferae indica* L.** Badawi A. Abou-Awad, Mahmoud M. Al-Azzazy and Sahar I. Afia (Egypt). Archives Of Phytopathology And Plant Protection, 45(1): 16-21, 2012.
- ✓ **Effect of *Trichoderma harzianum* (Th20K) N22 biotype in reducing infection level on some wheat cultivars with *Bipolaris sorokiniana*.** H.K. Taha, N.Y. Mohamad and B.Y. Ibrahim (Iraq). Arab Journal of Plant Protection, 29(2): 192-198, 2011.
- ✓ **Effective barley cover smut resistance genes in Iraq.** M.A. Al-Hamdany, J.A. Sabar, H.A. Abbas, S.N. Abdulwahab, I.H. Kadhem, H.S. Kytan, A.M. Taqi and N.N.M. Ali (Iraq). Arab Journal of Plant Protection, 29(2): 240-244, 2011.
- ✓ **Effectiveness of using the macphail traps for controlling the olive fruit fly, *Bactrocera oleae* (Gmel.) (Diptera: Tephritidae).** F. Mresheh, M. Kasantini and T. Jardak (Tunisia). Arab Journal of Plant Protection, 29(2): 179-186, 2011.
- ✓ **Effects of Bt transgenic rice line on stripe stem borer, *Chilo suppressalis* and its consequences on egg parasitoid, *Trichogramma brassicae* Bezdenko (Hymenoptera: Trichogrammatidae) in the laboratory.** Rasoul Marzban (Iran) Archives Of Phytopathology And Plant Protection, 45(4): 391-397, 2012.
- ✓ **Efficacy of formulation and storage on rice straw waste on the activation of bioagents against root-rot diseases of bean plants.** Eman R. Hamed, Nadia G. El-Gamal & Aliaa R. El-Shami (Egypt). Archives Of Phytopathology And Plant Protection, 45(1): 22-32, 2012.
- ✓ **Efficacy of some essential oils on controlling green mold of orange and their effects on postharvest quality parameters.** F.M. Ibtesam Badawy, M.A. Nashwa Sallam, A.R. Ibrahim and M.R. Asran (Egypt), Plant Pathology Journal, 10(4): 168-174, 2011.
- ✓ **Efficacy of the fungus *Beauvaria bassiana* (Bais.) Vuil on termite workers and soldiers of *Microcrotermes diversus* (Silvestri) at different temperatures.** R.F. Al-Jassany and M.A.A. Al-Salehi (Iraq). Arab Journal of Plant Protection, 29(2): 206-213, 2011.
- ✓ **Enhancement of the efficacy of two antagonistic yeasts with salicylic acid against *Penicillium expansum*.** Leila Farahani and Hasan Reza Etebarian (Iran). Archives Of Phytopathology And Plant Protection, 45(3): 260-267, 2012.
- ✓ ***Euserica modesta* Fairmaire (Coleoptera: Scarabaeidae): a new record for a chafer insect pest attacking citrus orchards in Egypt.** A. S.H. Abdel-Moniem (Egypt). Archives Of Phytopathology And Plant Protection, 44(19): 1883-1886, 2011.
- ✓ **First record of cercospora leaf spot disease on okra plants and its control in Egypt.** Eman S.H. Farrag (Egypt). Plant Pathology Journal, 10(4): 175-180, 2011.
- ✓ **First record of *Rhynchophorus ferrugineus* on *Phoenix canariensis* in Tunisia.** H. Chebbi (Tunisia). Tunisian Journal of Plant Protection, 6(2): 149-153, 2011.
- ✓ **First report of Iris yellow spot virus infection of garlic and Egyptian leek in Egypt.** E. E. Hafez, A. A. Abdelkhalek, A. A. El-Morsi and O. A. El-Shahaby (Egypt). Plant Disease, 96(4): 594, 2012.
- ✓ **Fusarium rot in cucumber greenhouses of Jiroft region.** Narges Hatami, Hamid Reza Zamani Zadeh, Mohamad Mehdi Aminaee and Hadi Zohdi (Iran). Archives Of Phytopathology And Plant Protection, 45(3): 325-338, 2012.
- ✓ **Genotype-isolate interaction for resistance to *Sclerotinia sclerotiorum* in sunflower**. R. Davar, R. Darvishzadeh and A. Majd (Iran). Phytopathologia Mediterranea, 50(3): 442-449, 2011.
- ✓ **Graft-transmission for three viruses belong to family Luteoviridae.** Y. Al-Naasan, S.G. Kumari, A.A. Haj Kasem and F. Azmeh (Syria). Arab Journal of Plant Protection, 29(2): 219-224, 2011.
- ✓ **Identification of the most important viruses infecting potato in Syria**. A.A. Haj Kassem and O.G.A. Refaay (Syria). Arab Journal of Plant Protection, 29(2): 165-170, 2011.
- ✓ **Impacts of two conventional insecticides on different stages of *Encarsia inaron* Walker parasitizing the whitefly, *Trialeurodes vaporariorum* Westwood under greenhouse condition.** S. A. Hoseini, A. A. Pourmirza, A. Ebadollahi and M. Ghane Jahromi (Iran). Archives Of Phytopathology And Plant Protection, 45(3): 268-275, 2012.
- ✓ **In vitro and in vivo antifungal activities of organic and inorganic salts against citrus sour rot agent *Geotrichum candidum*.** Idriss Talibi, Latifa Askarne, Hassan Boubaker, El Hassane Boudyach and Abdellah Ait Ben Aoumar (Morocco). Plant Pathology Journal, 10(4): 138-145, 2011.
- ✓ **Infection types of interaction between Iraqi wheat cultivars and bunt pathogen isolates with a preliminary survey of bunt resistant genes.** M.A. Al-Hamadani, H.Y. Jaber, M.M. Bashir, J.A. Sabbar, H.A. Abbas, I.H. Kadhem, H.S. Kitan, N.N.M. Ali, S.N. Abdul Wahab and A.M. Taqi (Iraq). Arab Journal of Plant Protection, 29(2): 233-239, 2011.
- ✓ **Isolation and identification of bacteria causing potato scab in Syria.** Kh. Al Taweel, T. Aasar and M. Ghanam (Syria). Arab Journal of Plant Protection, 29(2): 149-157, 2011.
- ✓ **Molecular characterisation of *Bacillus thuringiensis* isolates from the Egyptian soils.** M. Saker, H.S. Salama, M. Ragaei and N.M. Abd El-Ghany (Egypt). Archives Of Phytopathology And Plant Protection, 45(1): 110-125, 2012.
- ✓ **Occurrence of some fungal diseases on date palm trees in Upper Egypt and its control.** Eman S.H. Farrag and Kamal A. Abo-Elyousr (Egypt). Plant Pathology Journal, 10(4): 154-160, 2011.

- ✓ **Occurrence, characterization and management of fruit rot of immature cucumbers under greenhouse conditions in Oman**. A.M. Al-Sadi, F. Al-Said, S. Al-Kaabi, S. Al-Quraini, S. Al-Mazroui, I. Al-Mahmooli and M. Deadman (Oman). Phytopathologia Mediterranea, 50(3): 421-429, 2011.
- ✓ **Production of interferon-like substances in tomato plants immune to infection with Potato virus S following inoculation with this virus.** R.R. Al-Ani (Iraq). Arab Journal of Plant Protection, 29(2): 253-258, 2011.
- ✓ **Quantitative survey of stored products mites infesting wheat flour in Jeddah Governorate.** Abir Sulaiman Al-Nasser (Saudi Arabia). Journal of Entomology and Nematology, 3(8): 78–84, 2011.
- ✓ **Relationship between susceptibility to neonicotinoids and population dynamics of cotton aphid, *Aphis gossypii* Glover (Hemiptera: Aphididae).** Shadieh Gerami, Khalil Talebi, Alireza Bandani, Mohammad Ghadamyari and Vahid Hosseininaveh (Iran). Archives Of Phytopathology And Plant Protection, 45(2): 192-198, 2012.
- ✓ **Research on insecticidal plants in Tunisia: review and discussion of methodological approaches**. I. Chaieb (Tunisia). Tunisian Journal of Plant Protection, 6(2): 109-125, 2011.
- ✓ **Selective toxicity of three Acaricides to the two-spotted spider mite *Tetranychus urticae* and predatory mite *Phytoseuilus persimilis* in apple orchards**. Hany K. Abd-Elhady and Hany M.M. Heikal (Egypt). Journal of Entomology, 8(6): 574-580, 2011.
- ✓ **Studies on host preference and oviposition behaviour of *Trichogramma aurosum* Sugonjaev and Sorokina strains in choice and non-choice tests.** R. Samara, J.C. Monje, T. Qubbaj and C.P.W. Zebitz (Palestine & Germany). Arab Journal of Plant Protection, 29(2): 259-266, 2011.
- ✓ **Study of using the Bacterium *Bacillus thuringiernsis israelensis* in microbial control of *Musca domestica vicina, Diptera Muscidae* (Muscidae, Diptera).** Najlaa, Y. Abozinadah, Faten, F. Abuldahb, Nawal and S. Al-Haiqi. (Saudi Arabia). Journal of Entomology and Nematology, 3(4): 58-67, 2011.
- ✓ **Study on reproduction and development of olive tree psylla *Euphyllura olivina* Costa (Hemiptera: Psyllidae) under different plantation types.** A. Dibo and M. Ksantini (Tunisia). Arab Journal of Plant Protection, 29(2): 141-148. 2011.
- ✓ **Survey of *Cherry leaf roll virus* prevalence on walnuts and some species of stone fruits trees in Syria.** S. Al-Chaabi and F. Ismaeil (Syria). Arab Journal of Plant Protection, 29(2): 158-164, 2011.
- ✓ **Survey of entomopathogenic fungi in soils of different ecosystems in Lattakia**. M. Ahmad, S. Al-Moughrabi and A. Haj Hassan (Syria). Arab Journal of Plant Protection, 29(2): 171-178, 2011.
- ✓ **Susceptibility evaluation of some squash and melon local accessions and hybrid varieties to infection by *Zucchini yellow mosaic virus* and fruits yield loss assessment.** M.J. Mando, A.A. Haj Kasem, S. Al-Chaabi and S.G. Kumari (Syria). Arab Journal of Plant Protection, 29(2): 245-252, 2011.
- ✓ **The role of temperature in enhancing the insecticidal activity of *Bacillus thuringiensis* against *Spodoptera littoralis* larvae.** M.M. Matter and M.A. Gesraha (Egypt). Archives Of Phytopathology And Plant Protection, 45(3): 360-365, 2012.
- ✓ **Toxicity bioassays of some acaricides on the two spotted spider mite, *Tetranychus urticae* Koch. on *Phaseoulus vulgaris* L.** M. Al-Salahi, M.J. Al-Hajjar and M. Jamal (Syria). M. Al-Salahi, M.J. Al-Hajjar and M. Jamal (Syria). Arab Journal of Plant Protection, 29(2): 225-232, 2011.
- ✓ **Using of age-specific fecundity schedules to determine the favorite host plants of *Stethorus gilvifrons* Mulsant and its predation efficiency in laboratory.** M. Ahmad, M. Mofleh and M. Haloum (Syria). Arab Journal of Plant Protection, 29(2): 199-205, 2011.

EVENTS OF INTEREST

2012

***3-8 June**

22nd International Conference on Virus and Other Graft Transmissible Diseases of Fruit Crops' (ICVF), Rome, Italy.
Email: icvf2012@cra-pav.it
Fax: +390682070246.

***3-8 June**

International Fusarium Laboratory Workshop 2012, Bari, Italy.
See: www.mycotox-society.org\fusarium-2012

***17-22 June**

VI International Weed Science Congress, Dynamic Weeds, Diverse Solutions, Hangzhou, China.
Email: iwsc2012local@wssc.org.cn
www.iwss.info/coming_events.asp

***18-21 June**

8th International Workshop on Grapevine Trunk Diseases, Valencia, Spain.
www.icgtd.org/8IWGTD.html

***16-20 July**

The 13th Rodents et Spatium - International Conference on Rodent Biology, Rovaniemi, Finland.
http://sites.google.com/site/rodensetspatium13/

***14-16 August**

New Zealand Plant Protection Society 2012 Conference, Nelson, New Zealand.
Email: secretary@nzpps.org.see
www.nzpps.org.

***17–20 September**

7th Australasian Soilborne Diseases Symposium, Fremantle, Western Australia.
www.asds7.org

***1-5 October**

IOBC/WPRS Pheromones and other Semiochemicals Conference, Bursa, Turkey. http://www20.uludag.edu.tr/~bitkik/iobc/iobc_pheromone_2012.html

***25-27 October**

1st International MPU Workshop "Plant Protection for the Quality and Safety of the Mediterranean Diet", Bari, Italy. http://mpu2012.ba.cnr.it/

***6-8 November**

Regional Symposium on the Management of Fruit Flies in the Near East and North Africa Region, Tunisia.
Email: Khaled.alrouechdi@fao.org; nasraoui.bouzid@iresa.agrinet.tn

***11-14 November**

Entomological Society of America, ESA's 60th Annual Meeting, Knoxville Tennessee. USA. http://www.entsoc.org/entomology2012/symposia-entomology-2012

***18-23 November**

The International Citrus Congress, Valencia, Spain**.**
http://www.citruscongress2012.org/

2013

***18-22 February**

International Herbicide Resistance Conference, Perth, Australia.
Email: Stephen.Powles@uwa.edu.au

*** 25-30 August**

10th International Congress of Plant Pathology (ICPP2013), Beijing, China.
Email: president@cspp.org.cn
http://www.icppbj2013.org/

2014

***03-08 August**

10th International Mycological Congress (IMC10), Bangkok, Thailand.
E-mail: agrlkm@ku.ac.th

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