ARAB AND NEAR EAST
PLANT PROTECTION NEWSLETTER

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ARAB AND NEAR EAST PLANT PROTECTION NEWSLETTER

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EDITORIAL

Expert System for the Management of Agricultural Pests in the Arab Region: the Quality of data needed for its development and Use

An expert system is a computer program which simulates human knowledge and intelligence of individuals or institutions that have knowledge and experience in specific domains. The system includes a data base built around the accumulated knowledge and a set of rules and decisions designed to apply available knowledge on issues defined by the user of the system. The expert system is an intelligent tool which permit the compilation of all available knowledge to the scientists and transform it to a usable knowledge/solution which can be passed on to a large number of scientists and finally to farmers through extension services. In other words, the expert system permits the transfer of technology from highly competent experts to others who are not. The expert system is characterized by the high speed in which information can be instantly acquired without the need to travel or make field visits. All it takes is introducing to the system the inputs which describe the problem facing the user and the system will instantly provide the solution.

The development of an expert system for pest management on any of the agricultural crops requires the collaboration of scientists from different disciplines, who can work together as a team to reach a high level of pest management through (i) accurate characterization of the present state of knowledge, (ii) define the targets in a flexible way through consultation with all concerned, and (iii) agree on proper approaches of integrated pest management. The real challenge for developing and expert system for pest management is to be able to compile all accumulated information and knowledge in the research centers and academic institutions and all conclusions derived from scientific journals , technical reports, scientific books, specialized websites and other sources and put all of that in forms appropriate to construct the expert systems. At the same time ry to identify gaps in the existing knowledge in an attempt to fill such gaps through further research.

The development of an expert system for pest management for any crop based on accurate knowledge with the causal agent, precise diagnosis, and proper forecasting, will for sure lead to a better pest management decisions. The information inputs for such a system should be appropriate, enough, easy to understand, and useful at the local and international levels. The essential information to such an expert system which can fulfill these features and the needed level of pest management includes (i) all potential pests for the crop, (ii) geographic distribution and pest status, (iii) economic importance and crop loss caused by the different pests, (iv) environmental conditions which favor multiplication, movement and survival of pests, (v) symptoms caused by pests, and (vi) control measures appropriate for major pests.

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This page is an open forum for all members of the Arab Society for Plant Protection to express their views to further develop the plant protection profession and enhance its positive role in agricultural development in the Arab and Near East Region.

❖ CROP PROTECTION NEWS FROM ARAB AND NEAR EAST COUNTRIES

DISEASE AND PEST OUTBREAKS

EGYPT

First Report of a Canker Disease of Walnut Caused by *Botryodiplodia theobromae* in Egypt. *Botryodiplodia* spp. are known to produce cankers and dieback of several woody hosts. Botryodiplodia diseases were observed in 7-year-old orchards in Rhafah, north of Sinai, Egypt, in July 2005 and 2006. Symptoms appeared as dieback and cankers with dead leaves that were covered mostly with grayish white fungal growth; black pycnidia appeared on the surface of the infected branches. Plant foliage was discolored and partially or completely dry. When the outer bark was removed, the affected tissue appeared dark brown, in contrast to the yellowish green of healthy inner bark. On the basis of morphological characteristics (3), these fungi were identified as *Botryodiplodia theobromae* Pat. by the Plant Pathology Department, National Research Centre. Sporulating lesions were black and had a rough surface caused by the erumpent, confluent arrangement of pycnidia formed in infected tissue. The pycnidia were smallest in naturally infected twigs in nutritionally rich medium such as oatmeal agar (190 to 887 × 155 to 705 µm). Conidia were initially hyaline and unicellular, subovoid to ellipsoidal with a granular content. Mature conidia were two-celled, cinnamon to light brown, and often with longitudinal striations. Conidia measured 20 to 30 × 12 to 15 µm. Pathogenicity of isolates from symptomatic branches was determined by branch inoculations on rooted cuttings made from 7-year-old walnut trees growing in plastic pots. One isolate was inoculated on wounded and unwounded twigs using 100 µl of a suspension of 5 × 10(^5) conidia per ml. Control branches were sprayed with water. All inoculated and control plants were kept in a greenhouse and watered as needed. There were three replicate plants for each isolate and inoculation technique that was used. After 3 weeks, cankers and grayish necrotic lesions developed on all inoculated plants. Samples of tissue from 10 infected walnut branches were plated on water agar. *B. theobromae* was recovered from all sampled plants. Control plants did not display any symptoms. *B. theobromae* has been reported on species of walnut from the Hermosillo Coast of Mexico (1) and India (2). To our knowledge, this is the first report of walnut dieback and canker caused by this pathogen in Egypt. [W. M. Haggag, M.S.M. Abou Rayya and N. E. Kasim (Egypt). Plant Disease, 91:226, 2007].

IRAN

First Report of the Foliar Nematode *Aphelenchoides ritzemabosi* Infecting Chrysanthemum in Iran. During a nematode survey on cut flowers in the Pakdasht Region, Tehran Province, Iran, a species of foliar nematode belonging to the genus *Aphelenchoides* Fischer was detected in leaves of 10- to 11-month-old, greenhouse-grown (26 to 28°C) chrysanthemum (*Dendranthema grandiflorum* Kitam., cv. Puja) plants. Chrysanthemum leaves appeared discolored and slightly deformed. Diseased plants comprised approximately 40% of all plants in the greenhouse and occurred in scattered clumps along irrigation paths. Spots and blackish brown, irregular, necrotic areas occupied 5 to 50% of the leaf surface. Symptomatic tissue contained females, males, juveniles, and embryonated eggs of the nematode. All life stages of the nematode were detected in the mesophyll of younger and older infected leaves. The nematode population was extracted and quantified from symptomatic samples of 5 g of leaf tissues by modified Baermann funnel extraction and from 250 g of soil with a modification of the sugar centrifugal flotation method (1), counted, and identified. Morphological observations showed four incisures in the lateral field, excretory pore posterior to nerve ring, ovary single with oocytes in multiple rows, post-vulval uterine sac extending more than one-half of the vulva-anus distance, often containing sperm, tail elongate-conoid bearing a terminal peg with 2 to 4 minute processes. Males common (40% of females) posteriorly curved through 180° upon relaxation, tail conoid bearing a terminal peg with 2 to 3 processes. Measurements of 14 females and 11 males (body length = 987±48 µm, a = 49.2±4.4, b = 12.3±1.1, c = 20.6±2.8, V = 71±1.7, T = 49±2.3, stylet length = 12.6±0.6 µm, tail length = 47.9±5.2 µm; position of vulva = 70.8±1.7%; spicules length = 22.8±1.4 µm) conformed to the description of the chrysanthemum foliar nematode *Aphelenchoides ritzemabosi* (Schwartz) Steiner & Buhrer, (2). Voucher specimens have been deposited in the University of California Davis Collection. An average of 1,064 *A. ritzemabosi* per gram were found in the leaves of chrysanthemum, while only 48 nematodes were detected in the soil. To our knowledge, this is the first report of *A. ritzemabosi* infecting chrysanthemum plants in Iran. [A. Mohammad Deimi and S. Barouti (Iran) and J. E. Palomares Rius and P. Castillo (Spain). Plant Disease. 91: 637, 2007].

IRAQ

New Record of Mediterranean Fruit Fly in Iraq. It was mentioned in my previous article in the Resistant Pest Management Newsletter (Vol. 16, No. 1, 2006) that the invasion of the foreigner troops to Iraq has destroyed the agricultural quarantine completely. Due to this fact, a new record of Mediterranean fruit fly *Ceratitis capitata* (Wiedemann) was reported in citrus orchards in October 2006 in Iraq. This pest attacked citrus fruits in 1947 and disappeared after very strict regulations done by the Ministry of Agriculture at that time. The new appearance of such dangerous pest is due to the illegal import of different med fly hosts like citrus, stone fruits, vegitables and others from Syria, Iran, Lebanon, Jordan and Turkey. This is to

certify that the new democracy in Iraq introduce also new agricultural pest like fruit fly and may be others which are not discovered yet (Resistant Pest Management Newsletter, Vol. 16, No. 2, 2007, http://whalonlab.msu.edu/rpmnews/). [Ibrahim J. Al-Jboory, University of Baghdad, College of Agriculture, Plant Protection Department, Iraq, email: ijboory@yahoo.com].

MOROCCO

First Appearance of Fire Blight Disease on Pear Trees in Morocco. Fire Blight caused by *Erwinia amylovora* is one of the most destructive diseases of pears and other Rosaceae and ornamentals worldwide. This disease can destroy an orchard within few weeks (Manceau, comm. Pers). Until 2005, Morocco was consideredfree from this disease. In June 2006, Regional Agricultural Research Center of Méknès received pear tree samples from Meknes area showing symptoms similar to those caused by *Erwinia amylovora. Pathegneic bacterium* was isolated on three media: LPGA (Levure, Peptone, Glucose and Agar) (enrichment), B King (differential) or the semi selective medium CCT. To identify the pathogen, API 20th (BioMérieux) system was applied on non fluorescent isolates producing a hypersensitive reaction on Tobacco leaves. Results of all these biochemical tests confirmed the presence of *Erwinia amylovora* from the different affected organs. Reproduction of the characteristic symptoms of Fire Blight was obtained by inoculating young healthy fruit and leaves by dense bacterial suspensions under moist conditions. The appearance of exudate on the different infected organs was considered as a sign of presence of *E. amylovora*. From these exudates, re-isolation of the bacteria was achieved. As for all bacterial diseases, and with regard to chemical formulation, only application of the streptomycine antibiotic was effective. Its action was non specific and can consequently have a negative impact on the beneficial microflora. Its employment for many years in the United States and in other countries was restricted and even prohibited due to the appearance of resistant strains. A control program must be established in order to minimize the losses and limit the dissemination of the inoculum. [E.H. Achbani, Laboratory of Bacterial Plant Diseases, Regional Agricultural Research Center of Méknès, Morocco, Email: Achbani5@yahoo.fr].

OMAN

First Report of Leaf Rust by *Puccinia triticina* on Wheat in Oman. Wheat (*Triticum aestivum* L.), cultivated for forage and grain production, is an important crop in the Sultanate of Oman. In April 2005, leaf samples of an unknown local variety showing rust symptoms were collected from Rustaq, 100 km southwest of Muscat. Circular-to-oval, red-brown pustules, typical of uredinia, occurred mostly on the upper surface of leaves on plants nearing maturity. Telia with teliospores were observed on leaf sheaths. The disease was widespread in many fields and was likely to be limiting the yield. Urediniospores typical of *Puccinia triticina* Erikss. (=*P. recondita* Rob. ex Desm. f. sp. *tritici*) were roughly subglobose, measuring 18 to 28 × 20 to 25 µm, echinulate, with 3 to 8 scattered germ pores; teliospores were 2-celled, 34 to 50 × 15 to 17 µm, apex is chestnut brown, lower cell is light yellow, no germ pores. Pathogen identity was confirmed by nuclear ribosomal large subunit and internal transcribed spacer region-2 DNA analysis (voucher sequence deposited in GenBank, Accession No. DQ664194, voucher specimens deposited in the U.S. National Fungus Collections, BPI 872158 and 872159). Wheat is grown during the winter months in Oman and harvested in May. Although the disease was observed again in 2006, pathogen survival mechanisms are not presently clear, and current research is attempting to confirm its presence on alternate hosts, including grass weeds, and determine the distribution of the pathogen on local wheat land races and imported varieties. To our knowledge, this is the first documented report of *P. triticina* on wheat in Oman. [M. L. Deadman, A. Al Sa'di, and Y. Al Maqbali (Oman) and M. C. Aime (USA). Plant Disease, 91:113, 2007].

SAUDI ARABIA

First Report of Tomato (*Lycopersicon esculentum*) Pith Necrosis Caused by *Pseudomonas fluorescens* and *P. corrugata* in the Kingdom of Saudi Arabia. From 2002 to 2004, tomato (*Lycopersicon esculentum*) plants with external stem lesions, adventitious roots, and necrotic pith that was hollowed or chambered were received by the Clinical Lab of the Plant Protection Department from eight greenhouses in the Riyadh, Abha, and El-Kharj regions of Saudi Arabia. Bacteria were isolated on nutrient agar or King's medium B (KMB) from the stems of tomato plants cv. Red Gold, the cultivar most commonly grown in greenhouses. Gram-negative, rod-shaped bacteria were consistently isolated from stems with symptoms of pith necrosis. They were identified as *Pseudomonas fluorescens* (biotype I) and *P. corrugata* on the basis of morphological, physiological, and biochemical tests. Isolates of *P. fluorescens* isolated from Abha and El-Kharj were fluorescent on KMB, aerobic, and positive for oxidase, arginine dihydrolase, and gelatin liquefaction. Furthermore, all isolates produced levan-type colonies on sucrose nutrient agar and utilized glucose, 2-ketogluconate, sucrose, and sorbitol. They were negative for tobacco hypersensitivity and nitrate reduction. The strains of *P. corrugata* isolated from Riyadh were nonfluorescent, aerobic, and positive for oxidase, nitrate reductase, arginine dihydrolase, and utilization of malonate, alanine, trehalose, arginine, mannitol, and m-inositol. They were negative for levan, pectinase, tobacco hypersensitivity, and utilization of cellobiose and sorbitol. The identity of bacterial species was confirmed by Biolog analysis (carbon source utilization at 37°C), with a similarity index of 0.75 for *P. corrugata* and 0.71 for *P. fluorescens*. Four-week-old tomato plants (cv. Red Gold) were inoculated by injecting 50 µl of a bacterial suspension into the axils of the first true leaves. The bacterial suspension was prepared from 24-h-old cultures with sterile distilled water. Sterile distilled water was used as the negative control. After inoculation, plants

were covered with polyethylene bags for 24 h to maintain high humidity at 25°C. Necrotic lesions surrounding injection points were observed 14 days after inoculation. At 4 weeks after inoculation, all inoculated plants showed symptoms of necrotic pith similar to those observed on the samples received. Control plants injected with water remained healthy throughout the experiments. Isolates of *P. fluorescens* (biotype I) and *P. corrugata* were reisolated from inoculated plants and were identical to the original strains on the basis of Biolog analysis. To our knowledge, this is the first report of tomato pith necrosis in Saudi Arabia. [Y. Molan and Y. Ibrahim (Saudi Arabia). Plant Disease, 91: 110, 2007].

TUNISIA

First Report of Hop stunt viroid and Citrus exocortis viroid on Fig with Symptoms of Fig Mosaic Disease. Reverse transcription polymerase chain reaction (RT-PCR) was used for the detection of Hop stunt viroid (HSVd) and Citrus exocortis viroid (CEVd) in nucleic acid extracts of infected fig leaf tissues. RT-PCR results were confirmed by cDNA sequencing. This is the first report of CEVd and HSVd infecting fig in Tunisia. Alignments and phylogenetic analysis classify the HSVd Tunisian isolates in the plum-type group. CEVd Tunisian isolates are very closely related to the CEVd tomato hybrid callus isolate and to CEVd Gynura isolate from the USA. [S. Yakoubi, A. Elleuch, N. Besaies, M. Marrakchi and H. Fakhfakh (Tunisia). Journal of Phytopathology, 155 (2), 125–128, 2007].

TURKEY

First Report of the Presence of Citrus *Tristteza Virus* in the Eastern Black Sea Region of Turkey. In early spring of 2006, stunted plants were observed in more than 30 year-old trees (*Citrus unshiu*) grafted on *Poncirus trifoliata* in the Eastern Black Sea Region of Turkey. Young shoots were collected from 43 such trees in different commercial grooves and home gardens and were analyzed by DAS-ELISA and DTBIA using a commercial kit for detecting *Citrus tristeza virus* (CTV) (Loewe, Germany). Five trees gave a positive reaction. The presence of CTV in these trees was confirmed by using RT-PCR of total RNA extracts using primers specific for the CTV CP gene. This yielded the expected 672bp DNA fragment. When budwood from the five CTV- positive trees was grafted onto Mexican lime (*Citrus aurantifolia*) *seedlings*, symptoms (vein clearing and small sized leaves) were induced, that were similar to those elicited by CTV. The results showed that some Satsuma mandarins were infected by CTV. While CTV and one of its vectors, *Aphis gossypii*, have been previously in the Mediterranean and Aegean regions, the presence of this virus has not been reported elsewhere in Turkey. To our knowledge, this is the first report of CTV on Satsuma mandarins in the Eastern Balck Sea region of Turkey. [S. Korkomaz, B. Cevik, S. Onder, K. Koc (Turkey). Journal of Plant Pathology, 88(3, supplement): S69, 2006].

RESEARCH HIGHLIGHTS

ALGERIA

Effects of the Soil Texture and the Burying Depth of the Larvae on Some Biological Parameters of *Ceratitis capitata* (Diptera: Trypetidae). The effect of soil texture and depth on the emergence rate, duration of pupation and sex-ratio of the Mediterranean fruit fly, *Ceratitis capitata were evaluated*. Three different soil types were tested: clay loam, silty clay loam and sandy loam. Six burying depths from 2 to 20 cm were evaluated. Results showed that the silty clay loam soil reduced the emergence rate of *C. Capitata*, and the sandy loam soil favored pupation. The lowest depths (from 2 to 10 cm) gave the highest emergence rate. However, the sex-ratio seems not to be influenced by the soil type and less so by the burying depth. [D. Ali Ahmed, N. Soltani, A. Kellouche and F. Mazouzi (Algeria). African Journal of Agricultural Research, 2(3):105-111, 2007].

A statistic, Systematic and Biologic Study of Grasshopper Species in the East of Algeria and Host Preference for Harmful Types. A study on the bioecology of locusts in east Algeria enabled us to evaluate 30 species distributed in four families *Acrididae, Pyrgomorphidae, Pamphagidae* and *Acrydiidae*. The family *Acrididae* was the most prevalent in terms of species and individuals. A study on host preference of two locust species *Calliptamus barbarus barbarus* and *Ochrilidia geniculata* indicated that the first species preferred cereal grains and the second species preferred reed leaves causing heavy losses, as this plant is used in many industries. [Naima Benkenana, Herath Abboud, Messai Nassima and Amri Shereen, Entomology Laboratory, University of Constantine, Algeria; Email: naima_benkenana@yahoo.fr]

EGYPT

Applicable Control Measure Against *Orobanche ramosa* in Tomato Plants. Integration between mycoherbicides and herbicide (glyphosate) application for the control of branched broomrape (*Orohanche ramosa*) was carried out during early summer (January 2006) in a tomato field naturally infested with *O. ramosa* at Giza governorate. Egypt. Mycoherbicides, *Trichoderma harzianum* (T_1 and T_3) and *T. Viride* (T_2) were used in this study. Tomato seeds cv. GS_{12} were sown in polystyrene foam cells containing peat-moss soil inoculated three times (once/week) with each tested mycoherbicide. The herbicide glyphosate [*N*-(phosphonomethyl) glycine] was also used as a foliar spray at a rate of 50 ml/L. This was applied one time only, 10 days after tomato seedling transplantation during the growing season. Under field conditions, significant reduction in the incidence and intensity of branched broomrape infection was observed in the combined mycoherbicide and herbicidal treatments. The application of mycoherbicides followed by foliar spray with glyphosate was the most appropriate treatment. This resulted in the

highest reduction in the parasitic parameters of *O. ramosa*, although a lesser increase in tomato yield in comparison with the individual mycoherbicide approaches was recorded. The present work developed an effective, applicable and cost-effective method acceptable for controlling *O. ramosa* in tomato fields. [M.M. Abdel-Kader and N.S. EI-Mougy (Egypt). Australian Plant Pathology, 36: 160-164, 2007].

Improving Control of Fusarium Wilt of Leguminous Plants by Combined Application of Biocontrol Agents. In dual culture tests, *Trichoderma pseudokoningii* and *Bacillus subtilis* parasitized and inhibited the growth of *Fusarium oxysporum* f. sp. *fabae* and of *F. oxysporum* f. sp. *lupini*, which cause wilt on broad bean and lupine respectively. When applied to the seeds of these crops in field experiments, both antagonists controlled wilt of broad bean and lupine (75.2% healthy plants). A mixture of both biocontrol agents was more effective than either agent used alone. Moreover, the biocontrol agents provided a higher percentage of healthy plants than a fungicide tested for comparison. Fresh filtrate of both antagonists was more effective in suppressing pathogen growth than stored filtrate. [Omar A. Abdul Wahid (Egypt). Nematologia Mediterranea, 45: 231-237, 2006].

Pathogenicity of Entomopathogenic nematode, Steinernema feltiae Cross N33 against larvae and pupae of the peach fruit fly *Bacterocera zonata* (Saunders). Laboratory experiments were performed to determine the efficacy of the entomopathogenic nematode Steinernema feltiae Cross N 33 against second and third instar larvae and 1, 4 and 6 day old pupae of the peach fruit fly Bactrocera zonata (Saunders). Experiments were carried out in Petri dishes lined with moistened filter paper. *S. feltiae* was tested at 5 different concentrations of 50, 100, 200, 400 and 800 infective juveniles/ml. Mortality rates were recorded after 24, 48 and 72 h for larvae and after 72 h for pupae. Mortality rates after exposure ranged from nil to 24%, nil to 40% and 8 to 56% for 2nd instar larvae and 8 to 72%, 28 to 84% and 32 to 88% for 3rd instar larvae, respectively, whereas mortality rates of pupae ranged from 4 to 56% for 1 day old pupae, nil to 32% for 4 day old pupae and nil to 20% for 6 days old pupae. Slope, LC20, LC50 and LC90 were estimated. Slope values were 1.25 and 1.44 for 2nd instar and 3rd instar larvae and 1.6, 1.1 and 0.97 for 1, 4 and 6 days old pupae. Results indicated that 3rd instar larvae and 1 day old pupae of B. zonata were significantly more susceptible to nematode infection than 2nd instar larvae and 4, 6 days old pupae at all concentrations tested. [M.F. Mahmoud and M.A.M. Osman (Egypt). Agricultural Research Journal; Suez Canal University (Egypt), 6: 89-93, 2006].

Pathogenicity of the Entomopathogenic Nematodes; *Steinernema abbasi* and *Heterorhabditis bacteriophora* to Certain Economic Insect Pests. The study was undertaken to compare the pathogenicity of entomopathogenic nematodes; *Steinernema abbasi* and *Heterorhabditis bacteriophora* to the 4th larval instars of the black cutworm, *Agrotis ipsilon* Hubn., the Egyptian alfalfa weevil, *Hypera brunneipennis* Boh. and the American bollworm, *Helicoverpa armigera* Hb., also to pre-pupae and 3-days old pupae of *A. ipsilon*. Both *S. abbasi* and *H. bacteriophora* were highly pathogenic to the 4th instar larvae of all tested insects. The concentration of 200 IJs of either nematode species/larva caused 93.3% mortality in *H. armigera* and *A. ipsilon* and 100% in *H. brunneipennis* larvae. The highest mortality percentage among the treated pre-pupae was 100% at the concentrations of 100 and 200 IJs/cm^2 of soil surface 72 hours post infection. The two nematode species were found to be virulent to 3- day old pupae, causing 100 mortality at concentrations of 100 and 200 IJs/cm^2. [A. Mona Shoeb, Fatma A. Atalla and Ali M. Matar (Egypt). Egyptian Journal for Biological Control of Pests, 16(2): 99-102, 2006].

Alternative Means of Control of *Zeuzera pyrina* by Mass Trapping With Sex Pheromone, Horticultural, Mechanical and Local Chemical Treatments. Alternative means of control (sex pheromone mass trapping, horticultural, mechanical, and local chemical treatments) were evaluated at Nubaria district, Behera Governorate, Egypt during the three successive years (2000, 2001 and 2002) against *Zeuzera pyrina.* Rate of reduction of *Z. pyrina* with the whole year pheromone treatment revealed 62.27, 71.50 and 82.39%, pruning treatment 19.93, 23.20 and 30.49%, worming treatment 40.07, 53.25 and 61.55%, whole year local painting 80.90, 88.65 and 94.46%, whole year local spraying 58.50, 68.60 and 71.45%, whole year complete coverage spraying 82.83, 92.75 and 97.92%, partial pheromone and pruning 69.40, 80.05 and 86.55%, partial pheromone and worming treatments 86.47, 94.25 and 98,48%, partial pheromone and local painting 79.80, 87.45 and 95.27%, partial pheromone and local spraying 70.27, 95.65 and 98.86%, partial pheromone and complete coverage spraying 86.03, 95.65 and 98.86%, when applied in the three successive years, respectively. [A.W. Tadros, R. G. Abou El-Ela and M. M. Abdel Azim (Egypt). Egyptian Journal of Agricultural Research, 84(3): 825-837, 2006]

IRAN

Molecular Characterization and Potential Insect Vector of a Phytoplasma Associated with Garden Beet Witches' Broom in Yazd, Iran. In 2002, garden beet witches' broom (GBWB) phytoplasma was detected for the first time in garden beet plants (*Beta vulgaris* L. ssp. *esculenta*) in Yazd, Iran. Nested polymerase chain reaction (PCR) and restriction fragment length polymorphic (RFLP) analysis of PCR-amplified phytoplasma 16S rDNA were employed for the detection and identification of the phytoplasma associated with garden beet. A phytoplasma belonging to subgroup 16SrII-E, in the peanut witches' broom group (16SrII), was detected in infected plants. A symptomatic plant samples and the negative control yielded no amplification. The result of analysis of the nucleotide sequence of a 1428 bp fragment of 16S rDNA gene from GBWB phytoplasma (GenBank accession number DQ302722) was basically consistent with the classification

based on RFLP analysis, in which GBWB phytoplasma clustered with phytoplasmas of the 16SrII-E subgroup. A search for a natural phytoplasma vector was conducted in Yazd in 2004, in an area where garden beet crops had been affected since 2002. The associated phytoplasma was detected in one leafhopper species, *Orosius albicinctus*, commonly present in this region. The leafhopper *O. albicinctus* was used in transmission tests to determine its vector status for the phytoplasma associated with GBWB. Two of eight plants that had been fed on by *O. albicinctus*, showed mild symptoms of GBWB including stunting and reddening of midveins. A phytoplasma was detected in the two symptomatic test plants by PCR using universal primers and it was identified by RFLP as the suggests *O. albicinctus* is a vector of GBWB phytoplasma. [A. Mirzaie, S. A. Esmailzadeh-Hosseini, A. Jafari-Nodoshan and H. Rahimian (Iran). Journal of Phytopathology, 155 (4): 198–203, 2007].

Survey for *Grapevine fan leaf virus* in Vineyards of North-West Iran and Genetic Diversity of Isolates. *Grapevine fanleaf virus* (genus *Nepovirus)* was detected by double antibody sandwich enzyme-linked immunosorbant assay (DAS-ELISA) in 31 of 134 grapevine samples from the north-west of Iran. Reverse transcriptase polymerase chain reaction with two primer sets (S2515/ A3300 and CP433V /912C) targeting the *Grapevine fanleaf virus* coat protein gene resulted in amplification of the expected DNA fragments from some but not all DAS-ELISA positive samples. At the nucleotide level, the Iranian isolates were 84-95% identical to each other and 84-91% identical to other isolates from around the world. This is the first comprehensive analysis of the distribution and genetic diversity of *Grapevine fanleaf virus* in Iran. [N.S. Bashir and M. Hajizadeh (Iran). Australian Plant Pathology, 36: 46-52, 2007].

IRAQ

Attraction and Repellency Effect of Sap and Heartwood of Some Forest Trees on Termites (*Microcerotermes diversus* Silv., Isoptera: Termitidae). The results of the attraction and repellency effect of phenols, alkaloids, terpens, fixed and volatile oils of sap and heartwood of *Platanus orientalis*, *Populus nigra*, *Cupressus sempervirens*, *Pinus brutia*, *Salix acmophylla* and *Eucalyptus camaldulensis* showed a significant difference in attraction and repellency effect on termite workers according to the type of the chemical, compound, wood type and tree species. The chemical compound in general showed a repellent effect on termites workers and the sapwood chemical compounds showed a superior repellency effect on termites workers in comparison with the heartwood compounds. (Nazar M. Al-Mallah[1], Waleed A. Qasseer [2] and Shahin A. Mustafa[3] . (1) Department of Plant Protection, College of Agriculture and Forestry, University of Musol, Iraq; (2) Department of Plant Protection, College of Agriculture and Forestry, University of Mosul, Iraq; (3) Department of Forestry, College of Agriculture, University of Koya , Erbil , Iraq, Email: shahinkifre@yahoo.com)

Efficiency of Some Insecticides in Protecting Woods from Termite Infestation. The toxicity effect of Chemosbane %40.8 E.C, Chlorovite %48 E.C, Demone %25.3 E.C, Dursbane %40.8 E.C, Rigente %50 Sc, and Tirmedor %25 E.C insecticides on termite workers (*Microcerotermes diversus* Silv.) revealed that Tirmedor and Chlorovite exhibited a superior toxicity effect on termite in comparison with the other tested insecticides and their LC_{50} reached 0.0031 and 0.0035 M, respectively. Tirmedor also showed a high efficiency in protecting woods for 15 months from termite infestation with 80% mortality of termite workers. The expansion of wood protection period from termite infestation achieved by increasing insecticides concentration and using wood immersion method instead of wood spraying method. [Nazar M. Al-Mallah[1], Shahin A. Mustafa[2] and Waleed A. Qasseer [3] . (1) Department of Plant Protection, College of Agriculture and Forestry, University of Musol, Iraq; (2) Department of Forestry, College of Agriculture, University of Koya, Erbil, Iraq, Email: shahinkifre@yahoo.com; (3) Department of Plant Protection, College of Agriculture and Forestry, University of Mosul, Iraq].

JORDAN

Effect of Soil Amendment with Olive Mill by-products Under Soil Solarization on Growth and Productivity of Faba bean and their Symbiosis with Mycorrhizal Fungi. Field experiments were carried out at JUST agricultural research center during 1999-2000 growing season to evaluate the effects of soil amendment with olive mill by-products (Jift) on growth of faba bean and their symbiosis with VA fungi. Soil was amended with Jift at different levels (Jift: Soil; 0:10, 1:9, 2:8, 3:7 and 4:6) and exposed to solarization, methyl bromide and fungicide treatments. A split plot design with three replications was used, in which soil treatments (solarization, methyl bromide, fungicide and untreated control) were assigned to main plots and soil-Jift mixtures to sub plots. Our data indicated that the maximum seed yield (2943 kg ha•1) was achieved under soil mixtures treated with fungicide, followed by those which treated with methyl bromide (2662 kg ha•1) and untreated control (2343 kg ha•1). When Jift was considered as main factor, seed yield was found to be increased as Jift level was increased in soil mixtures. Even so, seed yield (2861 kg ha•1) at the highest Jift level (3:7) was not considerably different from the yield at the rate of 2:8 (2998 kg ha•1). Phosphorus nutrition may be enhanced with Jift amendment remarkably for soils branded by low organic matter contents. Mycorrhizal fungi population and symbiosis with the legume crops could be increased when Jift was added to the soil, particularly under soil sterilization practices. [T.A. Assaf, I.K.M. Hameed, I.M.A. Turk (Jordan) and A.M Al-Tawaha (Canada). World Journal of Agricultural Sciences. 2 (1): 21-28, 2006].

LEBANON

Effed of Essential Oils and Plant Extracts on Hatching, Migration and Mortality of *Meloidogyne incognita.* The nematicidal activity of the essential oil/pure components and plant extracts of naturally grown aromatic plant species against hatching, migration and mortality of the root knot nematode *Meloidogyne incognita* was investigated. The pure components carvacrol, thymol, and linalool at 1, 2 and 4 mg liter^{-1} concentrations were the most toxic against M. *incognita* second-stage juveniles (J2s) followed by terpineol and menthone. Hatching was completely inhibited at low concentrations (2, 4 mg liter^{-1}) of carvacrol, thymol, and linalool. Clove extracts (1 mg liter^{-1}) of *Allium sativum* significantly reduced hatching activity to below 8%, followed by flower extracts of *Foeniculum vulgare* which reduced hatching to below 25%. These extracts were also toxic against J2s of *M. incognita* (LC_{50} 43) followed by leaf extracts of *Pinus* pinea, *Origanum syriacum, Mentha microcorphylla, Eucalyptus* spp. and *Citrus sinensis* with an estimated LC_{50} of 44, 50, 65, 66 and 121 ppm respectively. Flower extracts of *F. vulgare* had the highest effect on J2 mortality in sand (86%). The highest concentration of essential oils (6%) was detected in leaf extracts of *Origanium syriacum.* Over 30 major components were identified in all the plant extracts tested. [Said K. Ibrahim, Abdullah F. Traboulsi and Samih El-Haj (Lebanon). Phytopathologia Mediterranea, 45: 238-246, 2006].

LIBYA

Effect of *Pantoea agglomerans* strain HIP32 as a Biological Control Agent for Leaf Spot Caused by *Xanthomonas vesicatoria* Strains on Tomato and Pepper Seedlings. Leaf spot or (scab) diseases caused by *Xanthomonas vesicatoria* of tomato and pepper causes economical losses in outdoor-growing crops and especially in warm temperate climates. The control of the disease using beneficial bacteria as a biological control measure gave promising results. An antagonistic strain identified as *Pantoea agglomerans* strain HIP32 was tested against tomato and pepper strains (SO_8, Xv_{14}) of *Xanthomonas vesicatoria* as pre- and post-treatment *in vitro* as well as by spraying *in vivo* under greenhouse conditions. Tomato leaves did not defoliate and the disease severity was noticeably reduced, more in pre-treatment than in post-treatment, as compared to the control. Reduction in disease severity and leaf spot numbers in tomato and pepper seedlings indicated the antimicrobial effect of the strain HIP32 on strains SO_8, Xv_{14} of *X. vesicatoria.* Antagonistic effect of strain HIP32 on pepper seedlings in terms of disease reduction was found more effective at 1-6 days after treatment compared to control. Strain HIP32 was found promising in its antagonistic effect against *Xanthomonas* leaf spot disease as it was effective against other diseases such as fire blight disease. (Khadija F. Al-arabi[1] and Maria L. Hevesi[2]. (1) Plant Protection Department, Faculty of Agriculture, Tripoli, Libya, Email: khadija_faraj@yahoo.com; (2) Plant Pathology Department, Orvinus University, Budapest, Hungary, Email: maria.hevesi@uni-corvinus.hu)

MAURITANIA

Side-effects of Botanical Insecticides Derived from Meliaceae on Coccinellid Predators of the Date Palm Scale. Bioassays were conducted in Mauritania to determine the toxicity of botanical insecticides from the tree *Melia volkensii* Gürke (Meliaceae) to ladybird predators (Coleoptera: Coccinellidae) of the date palm scale, *Parlatoria planchardi* Targ, (Homoptera: Diaspididae), *M. volkensii* seed extract was formulated in neem oil or a mixture of neem and maize oil. Three preparations were tested on *Chi/ocorus bipllstulatus* L. var. *iranensis,* an introduced species, and one on the indigenous *Pharoscymnus anchorago* F., a species already used in previous bioassays, Fourth instar larvae were exposed for 2 days to treated scale-infested date palm leaves. The botanical insecticides were toxic to *C. bipustulatus,* Median lethal application rates (LR_{50}s) were close to the recommended application rate of 11/ ha. In contrast, *P. anchorago* showed no increased mortality at this rate. Hazard quotients (application rate divided by the LR_{50}) were generally less than 2, suggesting a low risk for both species. However, risk mitigation measures are recommended when using oil formulations because the threshold value for *C. bipustulatlls,* the more susceptible of the two ladybird species, would be exceeded at higher dose rates or when conducting multiple applications. Sublethal effects included an extension of the larval stage and morphogenetic defects. These effects were again more pronounced in *C. bipustulatus* than in *P. anchorago.* [Ralf Peveling (Switzerland) and Sidi Quld Ely (Mauritania). Crop Protection, 25: 1253-1258, 2006].

OMAN

Antagonistic Microorganisms for the Control of Nematodes on Different Crops. In IPM strategy against agricultural pests, natural enemies can be considered as useful alternative methods beside pesticides and crop rotation. Nematode natural enemied were isolated from local soil and root samples, using pure agar in Petri dishes technique. Nematode-trapping fungi of the genera *Arthrobotrys* sp., *Dactylaria* sp., *Monacrosporium* sp. and *Candellabrella* sp. were isolated, in addition to an ectoparasitic fungus *Hirsutella* sp. were isolated [Muzna Al-Hanai, Masoud Al-Rabani and Mohamed Al-Mawlodi, Plant Protection Institute, Ministry of Agriculture and Fisheries, Sultanate of Oman, Email: research@omantel.net.om].

Molecular Characterization and Pathogenicity of *Pythium* Species Associated with Damping-off in Greenhouse Cucumber (*Cucumis sativus*) in Oman. A study was undertaken in 2004 and 2005 to characterize pathogens associated with damping-off of greenhouse-grown cucumber seedlings in 13 districts in Oman. Identification of *Pythium* to the species level was based on

sequences of the internal transcribed spacer (ITS) of the ribosomal DNA. Of the 98 *Pythium* isolates collected during the survey, *Pythium aphanidermatum*, *P. spinosum*, *P. splendens* and *P. oligandrum* accounted for 76%, 22%, 1% and 1%, respectively. *Pythium aphanidermatum* was isolated from all of the districts, while *P. spinosum* was isolated from seven districts. Pathogenicity tests showed inter- and intraspecific variation in aggressiveness between *Pythium* species. *Pythium aphanidermatum*, *P. spinosum* and *P. splendens* were found to be highly aggressive at 25°C. However, the aggressiveness of *P. spinosum* decreased when the temperature was raised to 30°C, which was found to correspond to the lower frequency of isolation of *P. spinosum* in the warmer seasons, compared to the cooler time of the year. *Pythium aphanidermatum* exhibited limited intraspecific variation in the sequences of the ITS region of the rDNA and showed 100% similarity to the corresponding *P. aphanidermatum* sequences from GenBank. The ITS sequence data, as well as morphological characteristics of *P. spinosum* isolates, showed a high level of similarity within and between *P. spinosum* and *P. kunmingense*, and suggested that the two species were synonymous. This study represents the first report of *P. spinosum*, *P. splendens* and *P. oligandrum* in Oman. [A.M. Al-Sa'di, A. Drenth (Sultanate of Oman), M.L. Deadman (Australi), A.W.A.M. de Cock (Netherlans) and E.A.B. Aitken (Australia). Plant Pathology, 56 (1): 140–149, 2007].

Solarization and Biofumigation Reduce *Pythium aphanidermatum* Induced Damping-Off and Enhance Vegetative Growth of Greenhouse Cucumber in Oman. Damping-off disease, caused by *Pythium aphanidermatum* is a major constraint in the greenhouse crop sector in Oman. Current commercial management practice relies almost exclusively on excessive chemical fungicide inputs. Under commercial conditions solarization and biofumigation (solarization following organic amendment of soil) both reduced *P. aphanidermatum* inoculum levels in soil relative to untreated controls. Both treatments also reduced the level of damping-off disease in greenhouse seedlings. Biofumigation and solarization both enhanced crop growth as measured by stem height and stem diameter. Effects on pathogen population levels, disease incidence and plant growth were greater during summer growing seasons than during the winter. [G.M. Deadman, H. Al Hasani and A. Al Sa'd (Sultanate of Oman). Journal of Plant Pathology, 88(3), 2006].

PAKISTAN

Management of *Callosobruchus chinensis* Linnaeus Through Use of Resistance in Stored Chickpea Varieties. Six varieties of stored chickpea were tested for their resistance against *Callosobruchus chinensis* L. (CCL) in the Laboratory of Department of Entomology, University of Arid Agriculture Rawalpindi. It was concluded that Parbat proved to be highly susceptible against CCL as compared with Paidar-91, the susceptible standard. The variety CM-2000 proved to be susceptible. The variety Punjab-91 and Pb-2000 proved to be partially resistant while Bittle-98 proved to be resistant against CCL. There was a significant correlation among number of adults and number of eggs, number of adults and percent weight loss, number of adults and number of holes, number of eggs and weight loss, number of eggs and number of holes, percent weight loss and number of holes. Chemical analysis of different varieties showed variations in dry matter, moisture, crude protein, fat fiber, total mineral (ash) and tanin. The study shows that variety Bittle-98 is a promising one which can be incorporated in future management programmes against CCL. [Muhammad Aslam, Farid Asif Shaheen, Muhammad Asad Abbas and Ambreen Saba (Pakistan). World Journal of Agricultural Sciences, 2 (1): 82-84, 2006].

SAUDI ARABIA

Determination of the Optimal Sterilizing Dosage for Red Date Palm Weevil (RDPW), *Rhychophorus ferrugineus* Oliv. (Coleoptera: Curculionidae), Using the Radiation-based Steri1e Insect Technique. Red date palm weevil, *Rhynchaphorus ferrugineus* Oliv., (Coleoptera: Curculionidae) (RDPW), is the most destructive economic pest of date palm, *Phoenix dactylifera* L., in Saudi Arabia and the neighboring countries. Many control techniques have been implemented to manage the impact of RDPW in the region. One eco-safe control technique for the management of insect pests is the radiation-based sterile insect technique (SIT), which has been applied successful1y to control several insects pests around the world. Different doses of Gamma radiations were evaluated at Natural Resources and Environmental Research Institute, King Abdulaziz City for Science and Technology (KACST) to determine the optima1 sterilizing dose for RDPW. One week old males were randomly selected from RDPW colony estab1ished in the laboratory of KACST and irradiated with 10, 15, 20, 25, 30 and 35-Gy doses of Thal radiation. The irradiated males were mated with similar normal aged females. Males were kept individually to record their longevity. However, mated females were transferred into oviposition cages. Results showed that eggs hatching rate decreased with increasing radiation doses and reached 20.17, 5.37, 6.05, 3.35, 0.75 and 0.72% for 10, 15, 20, 25, 30 and 35-Gy, respectively. Fertility of females mated with males irradiated with doses of 30 and 35-Gy was found to be less than 1% batching rate. These findings demonstrated the positive effect of gamma radiation on the expected lifespan of RDPW male as 16- 20 days for high radiation doses (30 and 35-Gy. respectively) compared with 102 days for the irradiated males with eighty two days difference. Based on the eggs fertility rate and expected male 1ifespan, the 30-Gy would be the optimal recommended dose to sterilize Red Date Palm Weevil. [H.Y. AI-Ayied, King Abdulaziz City for Science and Technology (KACST), Natural Resources and Environment Research Institute, P. O. Box 6086, Riyadh 11442, Saudi Arabia, Email: alayedh@kacsi.edu.sa; Abstracts of The Fourth Symposium on Date Palm in Saudi Arabia, 5-8 May,

2007, Date Palm Research Center, King Faisal University, Al-Hassa, Saudi Arabia].

Molecular Identification and Characterization of a Phytoplasma of 16SrI, *Candidatus* Phytoplasma asteris Group Associated with a Date Palm Disease in Saudi Arabia. Date palm (*Phoenix dactylifera* L.) has been affected by a disease called Al-Wijam in Saudi Arabia. Main symptoms are leaf stunting, yellow streaking and a marked reduction in fruit and stalk size, which progresses to reduce fruit production at maturity. A lethal phytoplasma was identified in Al-Wijam infected date palms in Al-Hassa oasis, Eastern region, however, no leafhopper vector candidates have been identified. More than 30 leaf samples with and without Al-Wijam symptoms and 60 leafhoppers were collected through a survey in Al-Hassa oasis during 2003-2005. Total DNA was extracted from plants and batches of three insects and indexed by a nested PCR reaction with phytoplasma generic primers P1/P7-R16F2n/R16R2. PCR products were characterized by RFLP and direct sequencing. The 16S rDNA sequences were compared with those of other reference phytoplasmas of GenBank. Phytoplasma rDNA was amplified from 18 symptomatic leaf samples and 14 insect batches. No PCR products were obtained from asymptomatic palms. RFLP patterns for all PCR amplifications were identical with *Rsa*I, *Alu*I, *Hinf*I, *Taq*I, *Hpa*II, *Kpn*I, *Dra*I, *Hha*I and *Sau3A*I enzymes. The 16S rDNA sequences of the phytoplasma identified in date palm (DQ913090) and *Cicadulina bipunctata* (Melichar) (DQ913091) were 100% identical , but with 98% homology with that of Aster yellows phytoplasma (AF322644) from 16SrI, *Candidatus* Phytoplasma asteris group. This is the first report of a *Ca. P.* asteris phytoplasma associated with a disease in date palm in Saudi Arabia, and the identification of a vector candidate as target for future transmission studies. [K. Alhudaib, Y.Arocha and P. Jones, King Faisal University, P.O. Box 420 Alhassa, Saudi Arabia, and Rothamsted Research, Harpenden, Hertfordshire, AL5 2JQ, UK, alhudaib@hotmail.com; Abstracts of the Fourth Symposium on Date Palm in Saudi Arabia. 5-8 May, 2007. Date Palm Research Center, King Faisal University, Al-Hassa, Saudi Arabia].

TUNISIA

Genetic Diversity of *Fusarium oxysporum* Populations Isolated from Tomato Plants in Tunisia. Fusarium crown and root rot of tomato (*Lycopersicon esculentum*) caused by *Fusarium oxysporum* f. sp. *radicis-lycopersici* is a new devastative disease of tomato greenhouse crops in Tunisia. Nothing is known neither about the population of this pathogen in this region, nor about the population of *F. oxysporum* f. sp. *lycopersici* the causal agent of Fusarium wilt of tomato. In order to examine the genetic relatedness among the *F. oxysporum* isolates by intergenic spacer restriction fragment length polymorphism (IGS-RFLP) analysis and to elucidate the origin of the *formae specialesradicis-lycopersici* in Tunisia by looking for genetic similarity of Tunisians isolates with isolates from a foreign source, the genetic diversity among *F. oxysporum* f. sp. *radicis-lycopersici* and *F. oxysporum* f. sp. *lycopersici* populations was investigated. A total of 62 isolates of *F. oxysporum*, obtained from symptomless tomato plants, were characterized using IGS typing and pathogenicity tests on tomato plants. All *Fusarium* isolates were highly pathogenic on tomato. *Fusarium oxysporum* f. sp. *radicis-lycopersici* isolates were separated into five IGS types. From the 53 *F. oxysporum* f. sp. *radicis-lycopersici* isolates, 34 isolates have the same IGS types (IGS type 25), and the remaining 19 isolates were distributed into four IGS types. However, the only nine isolates of *F. oxysporum* f. sp. *lycopersici* have six different IGS types. This difference of diversity between the two *formae speciales* suggests that *F. oxysporum* f. sp. *radicis-lycopersici* isolates have a foreign origin and may have been accidentally introduced into Tunisia. [K. Hibar (Tunisia), V. Edel-Herman, Ch. Steinberg, N. Gautheron (France), M. Daami-Remadi (Tunisia), C. Alabouvette (France) and M. El Mahjoub (Tunisia). Journal of Phytopathology, 155 (3), 136–142, 2007].

TURKEY

Antifungal Effect of Essential Oils from Some Turkish Herbs Against *Rhizoctonia solani* Kűhn. The antifungal properties of essential oils of *Origanum minutiflorum* (native to Turkey), *O. onites*, *Thymbra spicata* and *Satureja cuneifolia* were tested against six *Rhizoctonia solani* isolates obtained from infected seedlings from various forest nurseries in Turkey. Of the two methods to test the essential oils, the volatile assay was slightly more effective than the contact assay. While all *Rhizoctonia* isolates were strongly affected (>84.7) in the contact assay, the fungal isolates were completely inhibited by all the essential oils in the volatile assay. *R. solani* isolate Ra6 was the most sensitive, being suppressed by *O. minutiflorum* (100%), *S. cuneifolia* (100%) and *T. spicata* (99.6%). *R. solani* isolate Ra3 was also strongly inhibited by *O. onites* (99.1%). [Hatice Tuğba Doğmuş Lehtijärvi (Turkey). Phytopathologia Mediterranea, 45: 261-265, 2006].

Occurrence and Distribution of Grapevine Leafroll-associated Viruses 1, 2, 3 and 7 in Turkey. Grapevines in central Anatolia region of Turkey were surveyed for the prevalence of grapevine leafroll viruses. The field study and collection of samples were conducted in nine major grapevine-growing areas. Samples collected from 622 vines were tested for *Grapevine leafroll-associated virus* 1, 2, 3 and 7 (GLRaV-1, -2, -3 and -7). According to diagnostic tests and surveys, 27 of 41 cultivars and 95 of 622 samples (15.27%) were found to be infected at least one virus. GLRaV-1 (8.36%) was found to be the most frequently encountered virus associated with leafroll disease of grapes, followed by GLRaV-3 (5.78%), GLRAV-7 (3.86%) and GLRAV-2 (2.41%). [B. Akbaş, B. Kunter and D. Ilhan (Turkey). Journal of Phytopathology 155 (2), 122–124, 2007].

❖ SOME PLANT PROTECTION ACTIVITIES OF FAO AND OTHER ORGANIZATIONS

DESERT LOCUST SITUATION

General Situation during April 2007 Forecast until mid-June 2007

The Desert Locust situation remains serious in the Central Region even though aerial and ground control operations treated some 46,000 ha during April. As vegetation dried out, swarms moved from the coastal plains of the Red Sea and Gulf of Aden into spring breeding areas in the interior of Saudi Arabia, Yemen, northern Somalia and eastern Ethiopia and laid eggs. If the subsequent hopper bands are not controlled, new swarms could form in mid-June. In this case, swarms in Saudi Arabia are likely to move west to Sudan and perhaps south to Yemen while those in the Horn of Africa could remain and breed or perhaps migrate to the Indo-Pakistan border. All efforts should be made to monitor the developing and potentially dangerous situation closely and carefully.

Western Region. The situation remained calm in the region during April. Limited breeding continued in one area of northwest Mauritania and in southwest Algeria. Scattered adults were present in parts of central Algeria and western Libya. There is a slight risk that a few small swarms could move from the Central Region across the Sahel towards Niger, Mali and Mauritania. Consequently, Sahelian countries should be on alert.

Central Region. Aerial and ground control operations continued against hopper bands and swarms on the Red Sea coast in Eritrea, Saudi Arabia and Sudan where infestations declined in mid-April. In Sudan, a third generation of hatching and band formation occurred on the coast in Tokar Delta, and adults and a few groups moved west to cropping areas along the Nile. Most of the remaining swarms on the Saudi Arabian coast migrated east to the spring breeding areas in the interior where they laid eggs that should hatch in early May. If the resulting hopper bands are not controlled, swarms could form and move across the Red Sea to the interior of Sudan in about mid-June and breed with the onset of the summer rains. Some swarms could also move south into Yemen. Several swarms moved up the escarpment in northwest Somalia and crossed into Djibouti and eastern Ethiopia in April, and a few adults were seen in the northern highlands. At least one swarm reached the interior of Yemen. As a result of good rains in April, most of the swarms laid eggs that will hatch in early May, and new swarms could form by mid-June along the northern Somalia/Ethiopian border and, to a lesser extent, in the Yemeni interior. If conditions remain favourable in these places, the swarms will remain and eventually lay eggs. Elsewhere, small-scale breeding continued on the Red Sea coast in southeast Egypt, and was reported on the southern coast in Yemen.

Eastern Region. Small-scale breeding occurred in the spring breeding areas in western Pakistan and southeastern Iran in April, and a swarm was treated on the coast of Pakistan. Control operations were also undertaken near the Pakistani border in Rajasthan, India where local breeding was in progress because of pre-monsoon rainfall. Breeding will decline in the spring areas but will continue along the Indo-Pakistan border where higher than normal populations are expected to be present at the beginning of the summer.

❖ PLANT PROTECTION NEWS FROM THE REGION

SAFE USE OF CHEMICAL PESTICIDES TO CONTROL CROP PESTS

In order to maximize crop production and profitability, farmers use different pesticides (fungicides, insecticides, acaricides, herbicides …..etc.) to produce enough food to feed the ever increasing populations. The use of a specific pesticide is mainly to reduce pest population by spraying the chemical on the appropriate plant part which in turn reaches the pest in question and kill it. Through this exercise, farmers need to follow specific guidelines to prevent the danger which can result from the misuse of such chemicals to people, animals and the environment. The misuse of pesticides and repeated use of chemicals that can persist for long periods in controlling pests which attack vegetable and fruit crops leads to the accumulation of these chemicals beyond the international acceptable limits. It is essential then to calculate the intake of pesticide residues through the consumption of animal and plant products in order to avoid toxicity and accumulation of harmful chemicals in human tissues. International organizations such as FAO and WHO issued guidelines which identifies the maximum limits of chemical residues permissible on agricultural products, and consequently the maximum amount of each pesticide that can be taken on a daily basis, with no damaging side effect on human health. [Mahmoud Mohammed Mahmoud Suleiman, plant Protection Department, University of South Wadi Qena, Egypt, Email: soliman_univ@yahoo.com].

IDENTIFICATION OF NEW INSECTS IN QATAR

In a survey to identify Qatar insect fauna, which started in 2002 through collaboration between the Qatar Friends of the Environmental Center and the National Institute of Agricultural Research in France, the following three new species were recorded: *Calliardia ummsaidensis* (Psyllidae; Homoptera), *Cardiophorus qatarensis* (Elateridae; Coleoptera) and *Afrotethina martinezi* (Tethinidae; Diptera). There are another new eight species which are at present being classified. This project aims to: (i) identify the insect fauna of Qatar, (2) create a nucleous for the

Museum of insect fauna in Qatar, (3) publish three books related to the insect fauna in Qatar, (4) create a data base for insects in Qatar, (5) based on the data collected, develop a quarantine strategy for Qatar, and (6) identify natural enemies of insect pests in Qatar, and its use in the IPM of economic insect pests in Qatar. [Khaled Mardini, research worker in the project of Qatar insects survey, Youth General Authority, Friends of the Environment Center, P.O. Box 1822, Doha, Qatar, Email: jmardini62@hotmail.com].

INTRODUCING THE PARASITOID LEPTOMASTIX DACTYLOPII (HOW.) FROM TURKEY FOR THE CONTROL OF MEALY BUG IN SYRIA

The parasitoid *Leptomastix dactylopii* was introduced to Syria in June 2006 by the Center for Rearing and Application of Natural Enemies in Lattakia. The parasitoid was imported from the Biological Agriculture Consulting and Engineering Co. in Turkey, where this predator was found to be effective in controlling the pest population. Three generations of the parasitoid were reared in the laboratory at 27 C and 45% RH, in special cages. Progress is being made to produce large numbers of this parasitoid in the laboratory, and 42,000 parasitoids were released this season in areas infested with the mealy bug. This release was associated with the release of the predator *Cryptolaemus montrouzieri* Mulsant, which was also introduced from Turkey in 1996, and together with the parasitoid can effectively control the pest population. In 2007 around 500,000 parasitoids will be produced and released. The efficiency of this parasitoid and its field performance are under investigation. This parasitoid prefers the 3rd stage larvae and adults for oviposition. Parasitoid adults live for 35 days, and males are smaller than females. The females lay around 18 eggs per day, with a total of 200-300 eggs, at the rate of one egg per host [Nadia El-Khatib[1] and Mohamed Jamal Hajjar[2]. (1) Center for Rearing and Application of Natural Enemies, Lattakia, Syria, P.O. Box 2012, E-mail: nadia@arabscientist.org; (2) Directorate of Plant Protection, Ministry of Agriculture, Damascus, Syria, E-mail: hajjar-j@scs-net.org].

INTRODUCING THE PREDATOR SERANGIUM PARCESTOSUM FROM TURKEY TO CONTROL WHITE FLIES ON CROPS GROWN IN PLASTIC HOUSES IN SYRIA

The predator *Serangium parcestosum* was imported from the Plant Protection Institute, Adana, Turkey in June of 2006. This predator is known to control white flies, especially Bemisia tabaci, which severely affect vegetables grown in plastic houses. This predator was reported for the first time in India, then it was introduced to Georgia, France and Turkey. The predator is propagated in three steps: (1) propagating the host plants, which is eggplant, (2) infesting egg plant with Bemisia tabaci, (3) releasing the predator on the host plat infested with the insect prey. Rearing of the predator is done at 25±2 ºC, RH of 60±10% and 16 hours of light, and was successful at the Lattakia Center for Rearing and Application of natural Enemies. It is expected that the predator will be released during the next growing season to control white flies in plastic houses in the costal area of Syria. In addition, further studies are planned to investigate the biological indicators of the predator, and its effectiveness in the field. [Nadia El-Khatib[1] and Mohamed Jamal Hajjar[2]. (1) Center for Rearing and Application of Natural Enemies, Lattakia, Syria, P.O. Box 2012, E-mail: nadia@arabscientist.org; (2) Directorate of Plant Protection, Ministry of Agriculture, Damascus, Syria, E-mail: hajjar-j@scs-net.org].

SPREAD OF GREEN PIT SCALE (ASTEROLECANIUM PHOENECIS) IN SUDAN

It is a pest that was discovered on date palm in EL Golid area of northern state in 1986 was introduced form Saudi Arabia in 1974. The infested trees at that time were about 40,000 trees, and by now reached one million trees. An eradication program was attempted in 1992 by chemical, cultural and plant quarantine measures although proved successful and lowered infestation to 3-6%. However, shortly, thereafter the infestation rate reached more than 50%. Presently, the Plant Protection Department has recommended the adoption of IPM including the biological control methodology. Work is in progress on population dynamic surveys and the resistance evaluation of different cultivars to the insect, in addition to surveys of natural enemies in all the infested areas. A trial is in progress to compare the different methods of control (chemical and eradication by flame) in specific area. Assessment of introduced natural enemies from infested countries is also in progress. The owkr is supported by the Arab Organization for Agriculture Development. [Ishraga Mohamed Alhassan, Biological Control Section, Plant Protection Administration, Sudan].

LOCAL NATURAL ENEMIES OF POMEGRANATE BUTTERFLY VRACOLA LIVIA IN LIBYA

Pomegranate is one of the main crops in Jabal Al-Akdhar which gives high income to the farmers. This crop is infested by pomegranate butterfly which is one of the most serious pests infesting pomegranate causing up to 60-90% loss in yield. The infestation begins during fruiting period at the beginning of May until August when the fruits start ripening, when it becomes difficult for newly hatched larvae to go through pomegranate fruit skin. There are some natural enemies associated with pomegranate butterfly in Jabal Al-Akdhar. One of these natural enemies is an egg parasitoid *Telenomus* sp., family *Scelionidae*, order *Hymenoptera*, which seemed to be a new species and first record in Libya. In addition, an ecto-larval parasitoid was observed parasitizing the pomegranate butterfly larvae which was identified as *Bracon sp.*, (family *Braconidae*). The activity of egg parasitoid *Telenomus sp.* has been monitored since 2004 and it proved to be a very effective

parasitoid on pomegranate butterfly at Jabal Al-Akdhar, and naturally reducing the insect population. The parasitoid activity started from the beginning of the butterfly egg laying on fruits. However, the parasitism rate is low (between 0%-25%) during the first two weeks after egg laying and increased to almost 50% in the third week and up to 70% at the end of May. The highest parasitism rate was recorded from the second week of June to the third week of July, with an average parasitism of 70%. In 2004 the average parasitism rate of this parasitoid on eggs reached 72.6% in different regions of Jabal Al-Akdhar. In the 2005 season, the parasitism rate ranged between 28%-85.5% with an average of 53.3%. In 2006, it ranged from 0% to100% with an average of 63.3%. At the end of the infestation season on pomegranate crop, this pest shifts to a wild plant called Talh (*Acacia gerardii*). The pomegranate butterfly (*V. livia*) lay eggs on the branches, leaves and pods (the talh fruit is the main food for the larvae). In 2006, the activity of the natural enemies of *V. livia* was monitored on the Talh plant. The infestation by *V. livia* on the Talh plants starts from the beginning of September till the end of October. From the egg samples of the *V. livia* collected from Talh plants, the eggs' parasitoid *Telenomus* sp. emerged. The parasitism rate was from 72% to 100% in the collected samples. It was also noticed that the parasitoid *Bracon sp.* attacked the larvae which attack the pods of Talh plants. In addition, another larval parasitoid was noticed attacking the larvae on the pods. The total parasitism rate of both ecto-larval parasitoids ranged between 36% and 66%. (Issa Al-Mounzeri, Najma Al-Zadjali, Abdul Moneim Muktar and Mohamed Samir Abbas, Biological Control Laboratory, Plant Protection Research Center, Ministry of Agriculture and Fisheries, Sultanate of Oman, Email: research@omantel.net.om)

THE FIRST WORLDWIDE WEBSITE OF THE RED PALM WEEVIL, RHYNCHOPHORUS FERRUGINEUS (OLIVIER) (COLEOPTERA: CURCULIONIDAE)

Date palm (*Phoenix dactylifera* L.) is under threat due to the infestation of insect pests and the infection of plant diseases that reduce its production. The most serious threat on date palm is the red palm weevil (RPW), (*Rhynchophorus ferrugineus*), which invaded the Gulf countries in the mid-1980. Indeed, scientists, researchers and people, who care about the date palm, continuously search for information about this pest. Therefore, the first worldwide website (www.redpalmweevil.com) established in 1998 to help in finding the latest information about the RPW. This website includes the description of RPW, its damages and economic importance, in addition to RPW integrated pest management (IPM). Therefore, the latest references and photos for this pest and its damages are being included on the website. However, a new page named "RPW World Report" is also added; any scientist and/or specialist can write a report about the RPW in his/her country for sharing information with others, e.g., Spain, Egypt, Iran, India, Turkey, Italy and other countries. A summery about the date palm cultivation and a list of insect pests and plant diseases attacking date palm are included. Nevertheless, this website is the only one in the whole world collecting the latest information about the RPW and answering all visitors' questions about this pest. Finally, this website is to help all people, who care about the red palm weevil, to communicate and share ideas to control this pest. [K. Alhudaib, A. Al-Ajlan and K. Al-Abdulsalam, Department of Arid Land Agriculture (Plant Protection Science Program), College of Agricultural and Food Sciences, King Faisal University, Al Hasa, Saudi Arabia, Email: alhudaib@hotmail.com; Abstracts of The Fourth Symposium on Date Palm in Saudi Arabia, 5-8 May 2007, Date Palm Research Center, King Faisal University, Al-Hassa, Saudi Arabia].

WHEAT KILLER SPREADS FROM EAST AFRICA TO YEMEN: NEW PARTNERSHIP FORMED TO MONITOR AND PREVENT SPREAD OF DANGEROUS FUNGUS

A new and virulent fungus that attacks a wide range of wheat varieties has spread from East Africa to Yemen on the Arabian Peninsula. The wheat stem rust (*Puccinia graminis*), also known as wheat black rust, is capable of causing severe losses and can destroy entire wheat fields. It is estimated that as much as 80 percent of all wheat varieties planted in Asia and Africa are susceptible to this new strain. The spores of wheat rust are mostly carried by wind over long distances and across continents. "Global wheat yields could be at risk if the stem rust spreads to major wheat producing countries," said FAO Director-General Dr Jacques Diouf. "The fungus can spread rapidly and has the potential to cause global crop epidemics and wheat harvest losses of several billion dollars. This could lead to increased wheat prices and local or regional food shortages. Developing countries that are relying on wheat and do not have access to resistant varieties will be particularly hit," Dr Diouf said. FAO has joined the International Center for Agricultural Research in the Dry Areas (ICARDA) and the International Maize and Wheat Improvement Center (CIMMYT), which are leading the Global Rust Initiative (GRI), an international consortium to fight the spread of rust fungus diseases around the world. Canada, the United States and India are the main donors to the GRI. The new pathogen first emerged in Uganda in 1999 and is therefore called Ug99. It subsequently spread to Kenya and Ethiopia. A recent FAO mission in the field has confirmed for the first time that Ug99 has affected wheat fields in Yemen. It appears that the Ug99 strain found in Yemen is already more virulent than the one found in East Africa. Samples of the pathogen were sent to the United States and Canada for further analysis. There is a high risk that the disease could also spread to Sudan. Wind-borne transboundary pests and diseases can cause serious damage to crop production. In the late 1980s, a virulent strain of yellow rust, a wheat disease similar to stem rust, emerged in East Africa and crossed the Red Sea into Yemen. It then moved into the Near East and Central Asia, reaching wheat

fields of South Asia within four years. Major yellow rust epidemics were recorded with wheat losses of more than one billion US dollars. Based on monitoring of Desert Locust pathways, FAO does not exclude that wind currents could carry Ug99 stem rust spores from Yemen northwards along the Red Sea to Egypt or through the Saudi Arabian Peninsula towards countries in the Near East. FAO urges affected countries and countries at risk to increase their disease surveillance. Yemen in particular should be on the alert, step up field monitoring and training and prepare for direct control interventions in disease hot spots. Most important, control measures in affected countries should include the introduction of more resistant wheat varieties and restricting planting dates to break the disease cycle. FAO, ICARDA and CIMMYT will support countries in developing resistant varieties, producing their clean quality seeds, upgrading national plant protection and plant breeding services and developing contingency plans (http://www.fao.org/newsroom/en/news/2007/1000537/index.html)

❖ GENERAL PLANT PROTECTION NEWS FROM THE REGION

4TH BIOTECHNOLOGY CONGRESS, BENGHAZI, LIBYA

The fourth Biotechnology Congress was held in Benghazi during the period 21-24 April, 2007 at the Medical Complex of Karyounis University of Libya. The main themes of the congress were: genetic engineering, medical biotechnology, tissue culture, biotechnology and the environment, microbiology, food and biotechnology and biological control of pests. The meeting included 13 sessions, where 10 key presentations, 37 research papers, 8 round table discussion and 16 posters were discussed. Pest management was one of the areas which attracted interest. Biological control was strongly emphasized and the following recommendations were made: (1) importance of biological agents as components of IPM to reduce pesticides use, (2) encourage research on biological control and encourage the formation of scientific teams within the universities and research centers to work on this topic , (3) start implementing research results in this area on economically important pests, (4) survey all natural enemies of crop pests and activates its natural role in checking pest populations. [Reported by Khalifa Dabaj, Plant Protection Department, Faculty of Agriculture, El-Fateh University, Tripoli, Libya, E--mail: dabajhk@yahoo.com]

AN IPM SYMPOSIUM, LATTAKIA, SYRIA

A sympsium on integrated pest management (IPM) was organized in Lattakia at the Faculty of Agriculture, Tishreen University during the period 23-25 April, 2007. The main objectives of the symposium were (i) exposure to available pest control measures within the IPM programs, (ii) use of natural enemies in IPM, (iii) summary of IPM programs presently implemented, and (iv) exchange of experiences among the participants. In this event, 43 presentations were made, which cover the following four themes: biology of agricultural pests and their natural enemies, biological control of agricultural pests, IPM programs for vegetables, fruit trees and field crops pests, and the role of pesticides in IPM programs.

A SYMPOSIUM ON "CHALLENGES FACING PROCESSING, MARKETING AND PESTS OF DATE PALM", KING FASIAL UNIVERSITY, SAUDI ARABIA

A fourth symposium on date palm entitled "Challenges facing processing, marketing and pests control of date palm" was organized by the Center for Date Palm Research and held at King Faisal University under the patronage of his Royal Highness Prince Sultan Bin Abdel Aziz during the period 5-8 May, 2007 at Hufuf, Ihsaa Governorate, Saudi Arabia. This eastern region of the Kingdom is well known for date palm production, especially high quality dates. The symposium was attended by scientists from most Arab countries, in addition to other date producing countries. Participants enjoyed the generosity of all those involved in organizing this event. The symposium was opened in the presence of his highness Prince Badr Bin Mohamed Bin Jalawi the Governor of Ihsaa, his Excellency the Minster of Agriculture, Dr Fahd El-Ghoneim, his Excellency the President of King Faisal University Dr Youssef El-Gindan and Dr Salah El-Eid the Director of the Date Palm Research Center. The symposium program included 42 oral presentation sessions and six general plenary lectures, in addition to the poster presentation sessions. In total, 188 research papers were presented covering agricultural practices of date palm production, biotechnology in date palm, economics and marketing, environmental studies, propagation and evaluation of date palm varieties, date palm processing, by-products of date palm and date palm pests and their control. In parallel to the meeting an exhibition of date palm products was organized, where 23 private producers participated in addition to the Ministry of Agriculture and the Date Palm Research Center of King Faisal University. [Reported by Mohamed El-Said El-Zemaity, Ain Shams University, Cairo, Egypt].

❖ ARAB SOCIETY FOR PLANT PROTECTION NEWS

NEAR EAST REGION AND ARABIC-SPEAKING AFRICAN COUNTRIES IPP TRAINING WORKSHOP, CAIRO, EGYPT, JUNE 24-28, 2007

The workshop was jointly organized by the Secretariat of the International Plant Protection Convention (IPPC) and the Arab Society of Plant Protection (ASPP). The workshop covered primarily the Arabic speaking member countries in the Near East region and was funded by the Food and Agriculture Organization (FAO).

The overall objectives of this training-workshop are to increase national capacity through training for NPPO/IPPC official contact points and/or their nominated 'information exchange officer' in the use of the IPP in the exchange of official information, and how to access such information for use in the phytosanitary decision making process.

Participants in the workshop consisted of senior plant protection officers responsible for information exchange in the respective NPPO who already have a background in the management of phytosanitary information. Nine participants from 8 countries attended this workshop, namely Egypt, Jordan, Libya, Morocco, Sudan, Sultanate of Oman, Syria and Yemen. Dr. David C. Nowell (IPPC, FAO) served as the facilitator; Dr Bassma Bayaa (Syria) and Mr Charles Zarzour (Lebanon) as resource persons, and Dr Safaa Kumari (ASPP) as the rapporteur for the workshop.

Participants in the Near East Region and Arabic-speaking African Countries IPP Training Workshop

❖ SHORT PLANT PROTECTION NOTES

- A molecular diagnostic key to identify the seven most economically important species of *Meloidogyne* was developed by M. A. M. Adam and associates at the Scottish Crop Research Institute, Dundee, UK. (Plant Pathol. 56:190-197, 2007)
- A specific PCR assay to detect *Rhizoctonia solani* AG 1-IB in plant and soil using SCAR primers was developed by J. H. M. Schneider and associates at the Institute for Vegetable and Ornamental Crops, Germany; Institute of Sugar Beet Research, Netherlands; and McGill University, Canada. (J. Appl. Microbiol. 101:806-819, 2007)
- Adding KCl or NaCl to cassia oil enhances its antifungal effect in controlling *Alternaria alternata* on tomato, report W. Feng and X. Zheng at Zhejiang University, People's Republic of China. (J. Appl. Microbiol. 101:1317-1322, 2006)
- Four large groups of molecular markers (14-22 markers each) exist for resistance of *Phaseolus vulgaris* to halo blight (race 5), report M. W. F. Yaish and associates at University of Guelph, Canada, and Universidad de León, Spain. (Euphytica 152:397- 404, 2006)
- Fusarium head blight incidence and leaf spot severity in spring wheat were minimized by early planting combined with adequate starter nitrogen, report K.D. Sunedi and associates at Agriculture and Agri-Food Canada, Ottawa. (Agron. J. 99:113-121, 2007)
- Juvenile mortality in *Meloidogyne* spp. on tomato exceeded 97% and egg hatch exceeded 94% when soil was drenched with 4.2% methylene bisthiocyanate at 1.25 mg a.i./L report Z.-Q. Qi and associates at Nanjing Agriculture University and Shenyang Agricultural University, P.R. China. (Australas. Plant Pathol. 35:733-737, 2006)
- Of 200 international accessions of *Vicia narbonensis*, eight were identified as resistant to *Orobanche crenata*, report S. Nadal and associates at IFAPA-CICE and ETSIAM UCO, Cordoba, Spain. (Plant Breed. 126:110-112, 2007)
- Peanut seeds treated with *Methylobacterium* sp. induced systemic resistance to *Aspergillus niger* and *Sclerotium rolfsii*, report M. Madhaiyan and associates at Chungbuk National University, Republic of Korea, and Tamilnadu Agricultural University at Tamilnadu and Vellore, India. (Curr. Microbiol. 53:270-276, 2006)
- The most effective seed treatments to control head smut on corn were propiconazole and flutriafol + imazalil sulfate, report P. J. Wright and associates at New Zealand Institute for Crop and Food Research Ltd., Horticulture and Food Research Institute of New Zealand, and AgResearch Ltd., New Zealand. (N.Z. J. Crop Hortic. Sci. 34:23-26, 2006)

- To control avocado root rot, soil solarization inactivated mycelium after 1-2 hours at 38°C, but all propagules at 40°C, if chlamydospores of *Phytophthora cinnamomi* were present, report L. Gallo and associates at ICIA, Consejeria de Agricultura, and Universidad de la Laguna, Tenerife, Spain. (Ann. Appl. Biol. 150:65-73, 2007)

- Treating seeds with *Rhizobium leguminosarum* controlled Pythium damping-off of pea and lentil and increased nodulation, biomass, and yield, report H.C. Huang and R.S. Erickson of Agriculture and Agri-Food Canada, Lethbridge. (J. Phytopathol. 155:31-37, 2007)

❖ GENERAL NEWS

WEED TO WEED TRANSFER OF GLYPHOSATE RESISTANCE

Crop to weed transmission of glyphosate resistance via gene flow has been frequently researched but little information is available on weed to weed interactions. To determine the possible occurrence of weed to weed transfer of the glyphosate resistance, researchers at the Iowa State University and University of Delaware examined hybridization in Conyza, a prevalent weed species in the Midwestern United States. The researchers observed that hybridization and transfer of herbicide resistance can occur between *C. canadensis* and *C. ramosissima*. The researchers have determined that approximately 3% of ova were fertilized by pollen of the opposing species and produced viable seeds. The interspecific hybrids were found to have intermediate phenotype between the parents but exhibit superior resistance to glyphosate compared to the herbicide resistant *C. canadensis* parent. The possibility of introgressive hybridization suggest complications in the management of glyphosate resistant weed populations in glyphosate resistant crops and the containment of glyphosate resistance genes within these agroecosystems. The researchers reiterated that weed control should be combined with alternative management tactics to mitigate the evolution of herbicide resistance in the current agroecosystems. The paper published by the American Journal of Botany, can be accessed at: //www.amjbot.org/cgi/content/abstract/94/4/660

DETECTION OF PLANT VIRUSES VIA ENHANCED ELECTROCHEMILUMINISCENCE-PCR

Viruses can reduce crop productivity and affect the food supply and the environment. Many techniques have been developed for the detection of plant viruses. Examples include serological techniques and polymerase chain reaction (PCR) of viral genomes. However, these current detection methods, says a group of Chinese researchers, are usually tedious, multi-stage, have low-sensitivity and high cost. Ya-bing Tang and colleagues at the South China Normal University have reported a modified electrochemi-luminiscence (ECL) technique to detect plant viruses. ECL refers to light that is emitted when a molecule is electrochemically stimulated. The group has improved the current ECL-PCR method by adding extra nucleotide sequences to the PCR primers. They tested the method by detecting papaya leaf curl virus in their plant samples. The researchers report that they were able to increase the sensitivity of virus detection to 50 femto-mol (fmol) of PCR products with the modification. Normally the limit for ECL-PCR is 100 fmol. The method has also been reported by the group as a way to detect transgenic organisms in a previous study. The abstract in Analytica Chimica Acta, with links to the full paper for subscribers, can be accessed at http://dx.doi.org/10.1016/j.aca.2006.09.021

APHID-RESISTANT BARLEY NOW AVAILABLE

New Offerings Target Aphid's Grip on Barley - The United States Department of Agriculture Agricultural Research Service (USDA-ARS) and collaborators released two new varieties of barley that are resistant to all known types of Russian wheat aphid (RWA). The aphid has halted barley production in parts of eastern Colorado and Wyoming, and in parts of western Nebraska and Kansas. The new varieties, 'Sidney' and 'Stoneham', were developed by crossing an RWA-resistant barley material to a feed variety that was bred for drought-susceptible eastern Colorado but has been wiped out by the RWA. To read more:
http://www.ars.usda.gov/is/pr/2007/070319.htm

MOLECULAR TOOLS HELP UNDERSTAND SPREAD OF WEED GENOTYPES

Molecular tools can be extremely useful in determining the spread of weed genotypes and gene flow. The paper by the group of Christopher Preston in University of Adelaide and Indonesian colleagues, discussed how molecular tools can help detect the movement of herbicide resistance genes within and between plant populations. Three case studies were presented as a guide how to choose the most appropriate molecular tool for answering specific research questions. These include: a) detection of herbicide resistance in barley grass using randomly amplified polymorphic DNA (RAPD) markers, b) estimation of the degree of outcrossing between varieties of canola using inter-sequence simple repeat (ISSR) markers, and c) determination of herbicide resistance in blackgrass using PCR amplification of specific alleles (PASA). Preston's group stress that the choice of molecular marker will depend on the reproductive biology of the species studied (obligate outcrosser, self-fertilising, apomictic or clonal). Pollination biology of the species is an important factor for consideration as gene flow is intimately linked to the mode of reproduction. The paper, published by the journal Crop Protection, can be accessed by subscribers at http://dx.doi.org/10.1016/j.cropro.2006.06.018

DEVELOPMENT OF A BARRIER FOR WORKERS AND MALES OF HONEY BEES

Honey bee workers are the major element responsible for most activities inside and outside the bee hive. Attention was focused to find a way to isolate the workers to determine their age immediately after they leave the hexagonal cells in large numbers and based on research need and required field observations. The barrier is composed of a wooden frame, with a thickness of a single bee, containing a wire mesh with 3 mm pores, 42 cm long and 23 cm wide. The design is made in such a way to fit exactly in the vertical arms of the frame and from both sides of the Langstroth hives (Plate 1). The barrier permits the newly emerging worker bees to move freely on both sides of the wax holder in the lower side of the barrier. This barrier was used experimentally and in large scale with replications and proved to be very practical. The frame of the closed hive can be detached, the bees on it can be removed, and then the barrier can be installed and fixed on both sides of the frame and returned to the same hive (Plate 2). It can then be removed after 24 hours (or more, based on the study) in order to count the number of bees that recently left the hive. The barrier can be used for several purposes, such as (i) determine workers age which are stained when they pass through the pores of the wire mesh, (ii) addition of young worker s to weak hives and in large numbers, (iii) for behavior research purposes, (iv) to capture males in closed hives with interesting genetical characteristic s for breeding purposes, (v) it can also be used to capture the queen with associated workers [Talal Taher Mahmoud, Dahuk University, Iraq, E-mail: taherm47@yahoo.com].

Plate 1

Plate 2

❖ EVENTS OF INTEREST

MEETINGS AND SYMPOSIA

2007

*** August 12-17**

11th International Workshop on Fire Blight. Portland, Oregon, USA. *Please Contact*: Ken Johnson, Email: johnsonk@science.oregonstate.edu or Virginia Stockwell stockwev@science.oregonstate.edu;
Website: http://oregonstate.edu/conferences/fireblight2007

* **August 20-23**

The Third Asian Conference on Plant Pathology. Yogyakarta, Indonesia. *Please Contact:* Dr. Triwidodo Arwiyanto, Email: tarwiyanto@yahoo.com
Website: Website: http://www.3rdacpp.com

*** September 2-4**

The 1st International Conference on Date Pala: Integrated Crop Management of Date Palm and its Impacts for Producing Clean and Safet dates, Giza, Egypt. *Please Contact*: Dr Ahmed Abdu Hamed, Programmed Committee Chariman, 7 Nadi El-Seid Street, Dokki, Giza, Egypt, Tel/Fax: 3372193/ 3356175;
E-mail: plant_protection@hotmail.com;
plantprotection5@yahoo.com

*** September 10-14**

International Symposium on Novel Approaches to Disease and Pest Management in Banana and Plantain,Greenway Woods, White River, South Africa.
Website: www.promusa.org

*** September 11-12**

AAB (Association of Applied Biologists) Advances in Virology, University of Greenwich, London, UK.
Website: www.aab.org.uk/contentok.php?id=184&basket=wwsshowconflist

*** September 24-27**

16th Biennial Australasian Plant Pathology Society Conference, Adelaide, Australia.
www.australasianplantpathologysociety.org.au

*** September 26-30**

Mycoglobe International Conference, Bari, Italy. Website:www.ispa.cnr.it/mycoglobe/conference/index.php?id_conf=13

*** October 1-3**

2nd International Conference on Bacterial Blight of Rice (ICBB), Nanjing, China.
Website: http://icbb2007.njau.edu.cn

*** October 8-12**

2nd International Symposium on Tomato Diseases. Kusadasi, Turkey. *Please Contact:* Prof. Hikmet Saygili, Email: hikmet.saygili@ege.edu.tr
Website: www.2istd.ege.edu.tr

*** October 15-18**

XVIth International Plant Protection Congress (IPPC) to be held in association with IAPPS (International Association for the Plant Protection Sciences) and the BCPC International Congresses and Exhibitions, Scottish Exhibition Conference Center, Glasgow, Scotland, UK.
Website: www.bcpc.org/IPPC2007

*** October 15-19**

10th International Plant Virus Epidemiology Symposium *"Controlling Epidemics of Emerging and Established Plant Virus Diseases – The Way Forward*", ICRISAT, Hyderabad, India. *Please Contact:* Dr. P. Lava Kumar, Convener IPVE2007, ICRISAT, Patancheru 502324, Andhra Pradesh, India, Email: p.lavakumar@cgiar.org
Website: www.ipve2007.net

*** October 21-26**

14th International Botrytis Symposium, Cape Town, South Africa. Email: conf@conferencesetal.co.za;
Website: //academic.sun.ac.za/botrytis2007

*** November 12-15**

First International Phytoplasmologist Working group Meeting (IPWG), Bologna, Italy. *Please Contact*: Prof. Assunta Bertaccini, Convener, University of Bologna; Fax: +39-051-2096723; Email: bertaccini_a@biblio.cib.unibo.it
Website: //www.phytoplasma-vector.com/index.htm/;
www.mpunion.com

*** November 19-21**

Third International Conference on Plant Pathology & 7th Biennial Meeting of Pakistan Phytopathological Society, Department of Mycology & Plant Pathology, University of Punjab, Lahore, Pakistan. *Please Contant*: Prof. Dr. Rukhsana Bajwa, Department of Mycology and Plant Pathology, Quaid-e-Azam Campus, University of the Punjab, Lahore-54590, Pakistan; Tel: +92 429231846-7; Fax: +92 429231187; E-mail: chairperson@mpp.pu.edu.pk; website: www.pu.edu.pk/conferebce/mppl-conference-07.asp

*** November 22-24**

5th International Congress of Mediterranean group on Pesticide Research (MGPR), Agadir, Morocco. Please Contact: MGPR 2007 Secretariat, B.P: 1123 Agadir 80 000, Morocco. Tel: +21228241006/0155; Fax: +21228242243; Email: mgpr2007@gmail.com; Website: www.iavcha.ac.ma

*** December 11-14**

International Conference on Emerging and Re-Emerging Viral Diseases of the Tropics and Sub-Tropics, New Delhi, India. Please Contact: Dr Anupam Varma, Conference Chairman, ICVT-2007, Indian Virological Society, P.B. No. 11318, National Agricultural Science Complex, New Delhi 110012, India, Tel: +91-11-25842134; Email: icvtdelhi@yahoo.com; Fax: +91-11-25843113; Mobile: +91-9818756899; Website: www.icvt07delhi.org

*** December 12-14**

National Soybean Rust Symposium, Louisville, Kentucky, USA. Email: aps@scisoc.org; Website: www.apsnet.org

2008

*** April 7-10**

The 2nd Arab Conference for Applications of Biological Control in the Arab countries, Cairo, Egypt. Website: //www.esbcp.org/Conferences.htm

*** August 24-29**

9th International Congress of Plant Pathology (ICPP 2008), Torino, Italy. *Please Contact*: Congress Secretariat, Valentina Communication, PVia Cibrario 27, 10143 Torino, Italy, Phone: +39-011 4374250; Fax: +39-01 14374318
Email: info@icpp2008.org; Website: www.icpp2008.org

*** August 30 - September 2**

10th International Fusarium Workshop. Alghero, Sardinia, Italy.
Please Contact: Quirico Migheli, qmigheli@uniss.itat or Virgilio Balmas, balmas@uniss.it; Website: http://www.cdl.umn.edu/scab/10th_fhb_wkshp.htm

❖ PUBLICATIONS

NEW BOOKS

● **Mitigation of Children Exposure to Pesticides in Market Foods. 2007.** Authored by Mohamed El-Said El-Zemaity (Plant Protection Department, Ain Shams University). Published by Academic Bookshop Co., Cairo, Egypt, the book is written in a simplified way to widely spread the knowledge about the problem of food contamination with pesticides to normal non-specialized readers as well as scientists, specialized people in related agricultural sectors, food and agricultural industries, food safety inspection authorities and environmentalists.. The contents cover causes that make children more exposed to pesticides hazards, toxic effects of pesticides on children, occurrence and levels of pesticide residues in infant and children diets, effect of processing and preparation on reducing residues in foods, pesticides in water, characteristics of common pesticides in children foods, social recognition of risks and pesticide hazards, management of pesticide residues in foods, analysis of pesticides exposure under local conditions and the role of individuals and social sectors in mitigation of pesticide hazards to infants and children.

● **Vegetable Diseases–A Color Handbook.** 2007. Edited by Steven T. Koike, Peter Gladders and Albert O. Paulus. This book focuses primarily on diseases that are caused by pathogens. Chapters dealing with the general principles of the causes, diagnosis and control of vegetable crop diseases are followed by crop-based chapters. Each disease entry includes a brief introduction to the disease, detailed description of disease symptoms, information on the pathogen and disease development, and suggestions on how to manage the problem. Top quality colour photos illustrate the book throughout. This book will be useful to a range of professionals including research and extension plant pathologists; diagnosticians and plant lab personnel; teachers of agriculture and related subjects; university students in agriculture and related fields; commercial farmers, vegetable producers, and farm managers; agriculturalists in the fields of seed production, vegetable breeding, agrichemicals, pest control, marketing, and other subjects; government and regulatory persons dealing with agriculture; serious gardeners and hobbyists. Hardcover, 10.3" x 7.7"; 320 pages; 444 color images and 5 tables. Price 165 US$
(http://www.shopapspress.org/vedicoha.html)

● **Mineral Nutrition and Plant Disease.** 2007. Edited by Lawrence E. Datnoff, Wade H. Elmer and Don M. Huber. The book is peer-reviewed and multi-authored by scientists with expertise relating to each specific mineral element. A user-friendly benefit of this book is that each chapter focuses on one specific mineral element and explains the relationship between the nutrient and its affect on plant diseases. Each chapter describes the critical levels of each element involved in plant disease interactions, the effects of these elements on pathogens and plants, and the known mechanisms of how these elements suppress plant diseases. Benefits of specific mineral nutrients in each chapter recognize their interdependent interaction with each other

and all aspects of the plant physiology, genetics, and the environment. These mineral nutrient chapters are preceded by two helpful chapters on the "Chemistry of Plant Nutrients in Soil" and "The Physiological Role of Minerals in the Plant." This book is pertinent to plant scientists worldwide including agronomists, plant physiologists, horticulturists, extension scientists, soil scientists, plant pathologists, and librarians who serve them. It will also be useful as a fundamental text to use for introductory courses in these disciplines. Softcover, 8.5" x 11"; 400 pages; 40 color and black and white images. Price 79 US$
(http://www.shopapspress.org/minuandpldi.html)

❖ Selected Research Papers أوراق علمية مختارة

Entomology and Acarology الحشرات والعناكب

Cannibalism Phenomenon between *Spodoptera littoralis* (Boisd.) (Lepidoptera: Noctuidae) larvae in the laboratory. 2006. Saadia A. Abdel-Samea, H.A. El-Kady and G.A. Kheder (Egypt). Egyptian Journal of Agricultural Research, 84(3): 725-732.

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