



International Conference on Advances in Plant Sciences

**Conference Program
ICAPS 2019**

**INTERNATIONAL CONFERENCE
ON ADVANCES IN PLANT
SCIENCES**

ICAPS19, 25-26 April 2019

International University of Sarajevo

Sarajevo, Bosnia and Herzegovina

Abstract Book

Conference Organization

Conference Chairman

Prof. Dr. Mohamed Ragab AbdelGawwad (Associate Professor at the International University of Sarajevo, Bosnia and Herzegovina)

Conference Organization Committee

Prof. Dr. Kasim Bajrovic (Institute for Genetic Engineering and Biotechnology, Sarajevo University, Sarajevo)

Prof. Dr. Aziz Karakaya (Department of Plant Protection, Faculty of Agriculture, Ankara University, Ankara)

Prof. Dr. Rocío Pineda Martos (Teaching Staff Researcher, Department of Agroforestry Sciences DCAF, University of Huelva UHU, Spain)

Prof. Dr. M. Subandi (Head of Agrotechnology Laboratory, Faculty of Science and Technology, The State Islamic University of Sunan Gunung Djati of Bandung, Indonesia)

Prof. Dr. Oksana Sytar (Teaching Staff Researcher, Slovak Agricultural University, Nitra, Slovak republic)

Conference Manager

Ms. Emina (International University of Sarajevo, Bosnia and Herzegovina)

Ms. Vezirka (International University of Sarajevo, Bosnia and Herzegovina)

DAY 1: 25 April, 2019

09-10:00h - Registration

Welcome speech

10-10:10h ICAPS19 Chairman **Prof. Dr. AbdelGawwad, Mohamed Ragab**
International University of Sarajevo.
Bosnia and Herzegovina

Keynote Speakers

10:10-10:30h **Prof. Dr. Karakaya Aziz**
Ankara University,
Turkey

Title: **Detection of wheat stem rust race TTTTF in Turkey.**
Author(s): Nilüfer Akci, Aziz Karakaya

10:30-10:50h **Prof. Dr. Laurent Mesbah**
American University of Sarajevo,
Bosnia and Herzegovina

Title: **Climate Change and Crop Production**
Author(s): Laurent Mesbah

10:50-11:10h **Coffee Break**

11:10-11:30h **Oguz Ozdemir, PhD**
Agriculture faculty, plant protection faculty
Kurupelit Campus, 55139 Atakum, Turkey.

Title: **Determination of the efficacy of some chemical insecticides and bio-insecticides against adults of Anisandrus dispar Fabricius and Xylosandrus germanus Blandford (Coleoptera: Curculionidae: Scolytinae)**

Author(s): Rahman Kushiyevev, I. Oguz Ozdemir, Celal Tuncer

11:30-11:50h **Prof. Dr. Can Mehmet**
International University of Sarajevo,
Bosnia and Herzegovina

Title: **On the Accuracy of the 16S-rRNA Gene Conserved Regions**
Author(s): O. Gürsoy and Mehmet Can

11:50-12:00h

Topics Discussion

12:00-14:00h

LUNCH BREAK

14:00-14:15h

Mr. KAAN ALTAŞ

BLACK SEA AGRICULTURAL RESEARCH INSTITUTE,
Turkey

Title: **Research on Aphids Species on Rice Fields in Boyabat District.**

Author(s): Kaan ALTAŞ, İzzet AKÇA, Kibar AK

14:20-14:35h

Ms. Ajdina Karić

International University of Sarajevo, Bosnia &
Herzegovina

Title: **THE EFFECT OF PROBIOTICS ON GROWTH AND TOTAL PROTEINS IN DOMESTIC KALE (BRASSICA OLERACEA) UNDER ABIOTIC STRESS**

Author(s): Ajdina Karić, Jasmin Šutković, Ahmed Yildirim

14:40-14:55h

Ms. Zerina Duhović

International University of Sarajevo, Bosnia &
Herzegovina

Title: **Anti-Oxidant 1(ATX1) expression under Cd stress in domestic Brassica oleracea varieties and their reactome analysis**

Author(s): Zerina Duhović, Jasmin Šutković, Mohamed Ragab AbdelGawwad

15:00-15:20h

Coffee Break

15:20-15:35h

Mr. Dino Hasanagić

International University of Sarajevo, Bosnia &
Herzegovina

Title: **Metal-nicotianamine transporter (YSL3) expression under Cd stress in domestic Brassica oleracea varieties and their reactome analysis**

Author(s): Dino Hasanagić, Mohamed Ragab AbdelGawwad

15:40-15:55h

Mr. Abdullah BALTACI

BLACK SEA AGRICULTURAL

RESEARCH INSTITUTE, Turkey.

Title: **Seasonal Distribution of Apple mosaic virus (ApMV) in Apple Trees.**

Author(s): Abdullah BALTACI, Filiz ERTUNÇ

16:00-16:15h

Mr. Haris Lokvancic

International University of Sarajevo, Bosnia &
Herzegovina

Title: **In silico search for additional roles of Transcription factor subunit1-1 and 1-3 proteins in DNA repairMchanism in A. Thaliana.**

Author(s): Haris Lokvancic and Mohamed Ragab AbdelGawwad

16:20-16:35h

Prof. Dr. Zenebe Mekonnen Adare

Arba Minch University, College of Agricultural Sciences, Ethiopia

Title: **YIELD AND YIELD COMPONENTS OF COTTON (*Gossypium hirsutum* L.) AS INFLUENCED BY SOWING TIME AND DEFICIT IRRIGATION**

Author(s): Zenebe Mekonnen, A. Srinivas and T. Ram Prakash

16:40-17:00h

Discussion

DAY 2: 26 April, 2019

09:30-10:00h - Registration

10:00-10:15h

Prof. Dr. Karakaya Aziz

Ankara University, Turkey

Title: **Resistance in six-rowed barley genotypes to *Drechslera graminea***

Author(s): Aziz Karakaya, Arzu Çelik Oğuz, Güray Akdoğan

10:15-10:30h

Abdullah Baltacı, PhD

BLACK SEA AGRICULTURAL RESEARCH INSTITUTE,
Turkey.

Title: **Reactions of Some Pepper Breeding Lines and Cultivars to Resistance Breaking and Non-Resistance Breaking isolates of Tomato spotted wilt virus in Turkey**

Author(s): Ilyas Deligoz, Abdullah Baltacı, Miray Arlı Sokmen

10:30-10:45h

Prof Dr.. Khaled Abdel-Hamed Selim

food science and technology dept., faculty of agriculture,
fayoum university, fayoum, Egypt

Title: **Potential application of herbs extracts on increase oxidative stability of cottonseed oil**

Author(s): Mohamed Hussein Roby, Khaled Abdel-Hamed Selim, Khalel Ibrahim Khalela, Mohamed Atef Sarhana

10:45-11:00h

Prof Dr.Yasmin, Ghazalah

Higher Education Department, Pakistan

Title: **Comparative Morphological and Palynological studies of few medicinally important *Bistorta* species of family Polygonaceae from Pakistan**

Author(s): Ghazalah Yasmin, Mir Ajab Khan

11:00-11:15h **Coffee Break**

11:15-11:30h

ozdemir, ismail oguz, PhD

Agriculture faculty, plant protection faculty, Turkey

Title: Determination of sensitivity of four Trichoderma species to some fungicides used hazelnut orchards

Author(s): Rahman Kushiyevev, Ismail Erper, I. Oguz Ozdemir, Elif Yildirim, Celal Tuncer

11:15-11:25h

Prof. Dr. MUHAMMAD MUBASHAR HUSSAIN

COLLEGE OF AGRICULTURE, UNIVERSITY OF
SARGODHA, Pakistan

Title: Phenotyping of segregating generations derived from sunflower interspecific crosses (Helianthus annuus × Helianthus argophyllus)

Author(s): MUHAMMAD MUBASHAR HUSSAIN

11:25-11:40h

Dr. Abdi, Geleta Gerema

Oromia Agriculture Research Institute
Cereal Crop Research, Ethiopia

Title: Seedling And Adult Plant Resistance To Magnaporthe oryzae In Some Ethiopian Rice Varieties

Author(s): Abdi, Geleta Gerema

11:40-12:00h

Certificates, Closing, Farewell...

PRESENTATIONS

Detection of wheat stem rust race TTTTF in Turkey*Nilüfer Akci¹, Aziz Karakaya²**¹Central Research Institute for Field Crops, Yenimahalle, Ankara, Turkey**²Ankara University, Faculty of Agriculture, Department of Plant Protection, Dışkapı, Ankara, Turkey***Abstract**

Stem rust of wheat caused by *Puccinia graminis* f. sp. *tritici* is an important disease of wheat (*Triticum* spp.) in the world. This disease is also common in Turkey. In 2016, severe stem rust symptoms on bread wheat plants (*Triticum aestivum* L.) were observed in 2 fields of Gerze district of Sinop province located in northern part of Turkey. Two single pustules were obtained and North American differential test seedlings which consisted of 20 genotypes were inoculated. Disease assessment was accomplished 14 days after inoculation. Race identification was carried out. Isolates were virulent on genotypes carrying Sr genes 5, 21, 9e, 7b, 11, 6, 8a, 9g, 36, 9b, 30, 17, 9a, 9d, 10, Tmp, 38 and McN and avirulent on genotypes carrying Sr genes 24 and 31. Stem rust race TTTTF was found in both fields. Precautions should be taken against this stem rust race.

This study was supported by General Directorate of Agricultural Research and Policies, Turkey (Project No: TAGEM-BS-15/12-01/02-02).

Climate Change and Crop Production

Laurent Amine Mesbah

*American University of Sarajevo,
Bosnia and Herzegovina*

Faculty for the course on Climate Change and Sustainable development, Wilmette Institute. Member of the governing board of the International Environment Forum

Abstract

The topic of Climate Change is increasingly present in the mainstream and social global media where voices have been raised among the youth during the last year. Increasing evidence on global temperature but also the increasing amount and intensity of extreme weather events and patterns such as devastating hurricanes, extreme droughts and floodings, perturbation of seasons, etc. The community of climate scientists and policy makers at the global level have been regularly indicating that climate change is real and that its consequences can be devastating not just for the existing earth ecosystems but also for human societies. In 1992 a global legal framework was established at the occasion of the Earth Summit in Rio with the United Nations Framework Convention on Climate Change but also the Convention on Biodiversity. International efforts have been raised to learn to mitigate and adapt to climate change but also to reduced biodiversity losses. With a rapidly increasing world population pressure on resources are increasing and one great challenge for humanity is to feed the growing population. With limited resources on this finite planet earth and the challenges of climate change is humanity able to produce enough food for every one and for future generations ? Are current production and consumption processes able to cope with such a challenge ? How can crop science contribute to this important goal ? Different aspects need to be considered. On one hand developing biotechnologies provide new promises with transgenic plants and gene editing, on the other hand modern high technologies with large scale industrial farming have shown to have its limits. So which path do we need to take and what can be the contribution of plant scientists for a more sustainable food production and consumption? We will explore some existing ideas and reflections including some for Bosnia and Herzegovina.

Determination of the efficacy of some chemical insecticides and bio-insecticides against adults of *Anisandrus dispar* Fabricius and *Xylosandrus germanus* Blandford (Coleoptera: Curculionidae: Scolytinae)

Rahman Kushiyeve, I. Oguz Ozdemir, Celal Tuncer

Agriculture faculty, plant protection faculty

Kurupelit Campus, 55139 Atakum, Turkey.

Abstract

Hazelnut is one of the main agricultural products in Turkey and 70-75% of the world's hazelnut demand is supplied by the country. Ambrosia beetles, *Anisandrus dispar* Fabricius and *Xylosandrus germanus* Blandford (Coleoptera: Curculionidae: Scolytinae) are serious economic pests in hazelnut orchards. In this study, the efficacy of seven chemical insecticides [Best-Alfa 100 EC (Alphacypermethrin), Eforia 247 SC (Thiamethoxam+Lambda-cyhalothrin), Marshal Power EW (Zeta-cypermethrin), Mesurol WP 50 (Methiocarb), Proteus OD 170 (Thiacloprid+Deltamethrin), Savant SL 50 (Indoxacarb) and Süper Takimethrin 100 EC (Alphacypermethrin)] and two bio-insecticides [Laser 100 SC (Spinosad) and Neem Azal T/S (Azadirachtin)] used in hazelnut orchards were tested against adults of *A. dispar* and *X. germanus* under laboratory conditions. The chemical insecticides and bio-insecticides are prepared at the recommended dose, and they were applied to adults in petri dishes using a Potter spray tower (2 mL per dish). Only sterile-distilled-water was sprayed into control petri dishes. Each treatment was replicated 5 times using 5 adult insects for each replicate. All petri dishes were incubated at 25±1°C and 70±5 % RH. Dead individuals were counted daily following treatment for 9 days. As a result, Proteus OD 170 and Mesurol WP 50 were caused 100% mortality on adults of *A. dispar* within 5 days. At 9th day, other insecticides were caused different mortality rates against the adults. But, the bio-insecticides were found to be ineffective against adults of *A. dispar*. On the other hand, *X. germanus* was determined to be very sensitive according to *A. dispar* against chemical insecticides. All chemical insecticides applied *X. germanus* were reached 100% death within 7 days. In addition, the bio-insecticide Laser 100 SC were caused 60% mortality on adults of *X. germanus* after 9 days. These results showed that Proteus OD 170 and Mesurol WP 50 were highly effective against the two pests.

On the Accuracy of the 16S-rRNA Gene Conserved Regions

O. Gürsoy, M. Can

International University of Sarajevo International University of Sarajevo

Abstract

The study of microbial communities through sequencing the 16S rRNA gene by the use of high throughput sequencing technology has emerged as a significant improvement for the discipline. However, the short size of these sequences is a limiting factor for the taxonomic classification of bacteria and archaea. These short reads are amplified from DNA, using primers. Although several researchers claim that they succeeded to create the best universal primers, the reality is that no primer has been demonstrated to be truly universal. This suggests that conserved regions of the 16S rRNA gene is not conserved enough. The aim of this study is to evaluate the conservation degree of the conserved regions separating the hypervariable regions of the 16S rRNA genes. Data contained in Greengenes, SILVA, and RDP databases are used for the study. Primers reported as matches of each conserved region were assembled to form fifteen contigs by Martinez-Porchas et al. (2017). Under the information of the degenerate bases in primers these contigs are multiplied to cover all possibilities of degenerate bases. In Greengenes database there are 198,510 nonredundant 16S rRNA genes are reported. This number is 1,488,662 for SILVA, and 1,350,270 for RDP. To analyze the level of conservation of a contig, one gene is selected from one database, then using the longest common subsequences, for each of these 15 contigs, the longest common subsequences are found between a contig, and a gene. Then the length of longest common subsequence is divided by the length of the contig to get the percentage of conservation of this contig in that gene. This is done for each contig, in the entire databases. Averages revealed that the segments of contigs are not as conserved as expected, 72% in Greengenes, 71% in SILVA, and 57% in RDP. It is concluded that conserved regions of the 16S rRNA genes exhibit considerable variation that has to be considered when using these conserved regions as bases for primer production.

Research on Aphids Species on Rice Fields in Boyabat District.

Kaan ALTAŞ, İzzet AKÇA, Kibar AK

BLACK SEA AGRICULTURAL RESEARCH INSTITUTE, Turkey

Abstract

Rice is one of the most important grain plants in the world and in Turkey. This study was carried out to determine the types of aphids and their present situation in the paddy production areas of Boyabat district of Sinop province. The sampling was made in five different paddy fields about 10 da in each village from 3 different villages connected to the district. In this study; one species of aphids were found in the paddy fields, and this species was identified as *Rhopalosidum padi* (L.) from the Aphididae family. The population of *R.padi* was mostly determined in paddy fields (110,6 unit/m²) in Osmanköy. From the others village in Alibeyli village, the population was determined 102,56 unit/m² and 101,40 unit/m² in Karacaören village. When we consider all villages, the *R.padi* population in the paddy cultivation areas of Boyabat district was found to be 104,84 unit/m². This rate is well above the economic damage threshold. This study is the first research on the aphids that harm the rice plant in our country.

THE EFFECT OF PROBIOTICS ON GROWTH AND TOTAL PROTEINS IN DOMESTIC KALE (*BRASSICA OLERACEA*) UNDER ABIOTIC STRESS

Ajdina Karić, Jasmin Šutković, Ahmed Yildirim
International University of Sarajevo, Bosnia & Herzegovina

Abstract

Probiotics are live microorganisms that beneficially affect the hosts, both animals, and plants. The effect of probiotics on plants was examined on kale (*Brassica oleracea*), annual plant with natural resistance to diseases, changes in temperature and ability to tolerate and accumulate toxic materials, like Cadmium. Cadmium, due to its toxicity, alters various biochemical processes in plants, such as photosynthesis and protein synthesis. This study was carried out to evaluate the effect of different probiotic supplements in combination with Cadmium Chloride treatments on growth and total proteins in domestic kale. It examined the probiotics as potential, environment-friendly option for boosting plants growth. Seeds were germinated on towel paper and soil and treated with different probiotic supplements previously grown at LB medium. After germination of seeds, the length of the root was measured, and protein isolation was performed. Protein concentration was determined using Bradford assay and SDS PAGE was used to prove the viability of extracted proteins. The results showed that probiotics supplements used in this study decreased kale growth in all experimental groups while increased concentration of total proteins.

Anti-Oxidant 1(ATX1) expression under Cd stress in domestic Brassica oleracea varieties and their reactome analysis

*Zerina Duhović, Jasmin Šutković, Mohamed Ragab AbdelGawwad
International University of Sarajevo, Bosnia & Herzegovina*

Abstract

Cadmium Chloride (CdCl_2) is an important pollutant in the environment, toxic to most organisms and a potential threat to human health. It is a toxic heavy metal which causes oxidative stress in plants and has a high level of toxicity for animals and human too. This study is carried out to investigate the expression of Anti-Oxidant 1(ATX1) gene in domestic wild cabbage (*Brassica oleracea*), under Cadmium Chloride stress and also to do reactome analysis. The expression of Anti-oxidant (ATX1) gene will be examined on wild cabbage which is an annual plant, grown from seeds with natural resistance to diseases and changes in temperature and also with the ability to tolerate and accumulate toxic materials such as Cadmium Chloride. This plant is very beneficial for our health, it reduces the risk of several types of cancer and degenerative diseases. Cadmium due to its toxicity alters various biochemical processes in plants, such as disturbance of photosynthesis and transpiration, uptake of minerals and protein synthesis. Based on previous researches, the ATX1 is protein-coding gene that controls root growth by regulating cell cycle duration, cell production, and the transition from cell proliferation in the root apical meristem (RAM) to cell elongation. In this experiment, I am going to try to isolate this gene and measure its expression due to Cadmium Chloride stress.

Metal-nicotianamine transporter (YSL3) expression under Cd stress in domestic Brassica oleracea varieties and their reactome analysis

*Dino Hasanagić, Mohamed Ragab AbdelGawwad
International University of Sarajevo, Bosnia & Herzegovina*

Abstract

Different experiments showed us that metal-nicotianamine transporter (YSL3) gene is involved in the lateral transport of nicotianamine-chelated metals in the vasculature of *Arabidopsis thaliana* (Brian M. Waters et al., August 2006), but also in other types of species like *Brassica oleracea* (wild cabbage). Parallel with these findings, it was found that Cadmium is heavy metal toxic to every living organism (Lagerwerff, 1972; Chakravarty and Srivastava, 1992). However, some concentrations of Cd could be trigger for root development in plants. We want to find correlation between transportation of different concentrations of Cd in vasculature of *B.oleracea* and their growth hormone's reactions on concentrations of Cd, respectively. This study should help in understanding of plant's growth mechanisms and possible application of our knowledge in agriculture. I will search for the optimum level of Cd in roots, and its relation between processes inside cells. Laboratory work should be supported by the bioinformatic's reactome analysis, and show us correlation between data that I will collect during this research project.

Seasonal Distribution of Apple mosaic virus (ApMV) in Apple Trees

Abdullah BALTACI, Filiz ERTUNÇ

BLACK SEA AGRICULTURAL RESEARCH INSTITUTE, Turkey

Abstract

Apple mosaic virus (ApMV) is one of the most important virus in the apple production areas. This study was carried out to detect of seasonal variation of Apple mosaic virus (ApMV) on apple tissues by DAS-ELISA and Reverse Transcriptase Polymerase Chain Reaction (RT-PCR) which the code protein gene region was targeted. Tissues were sampled between March 2010 and January 2011 from pre-determined 5 apple trees monthly, considering the existed tissues of the plants such as shoot, leaf, flower and fruit samples. A total of 115 samples (55 shoots, 45 leaves, 5 flowers, 10 fruits) were collected. Tissues were analyzed by DAS-ELISA and RT-PCR, respectively. ApMV was detected on 10 of 115 apple tissue samples which were collected in May, June, and July on 6 shoots and 4 leaves by DAS-ELISA. When the samples were performed by RT-PCR 11 of 115 tissue samples were found infected which were collected in May, June, and July on 7 shoots and 4 leaves. According to our results, May was found the most suitable period for ApMV detection in apple trees.

In silico search for additional roles of Transcription factor subunit1-1 and 1-3 proteins in DNA repairMchanism in A. Thaliana

*Haris Lokvancic and Mohamed Ragab AbdelGawwad
International University of Sarajevo, Bosnia & Herzegovina*

Abstract

DNA replication is a process in which from one DNA molecule two identical DNA molecules are produced. It is important to mention that during that process of DNA replication many mistakes and damages occurs. Mentioned problems are solved by DNA repair systems. Results of previous studies on TFB1-3, TFB1-1, GTF2H2, GTF2H3 and GTF2H4 (TFB protein homologues) showed their involvement in nucleotide excision repair. They are also component of the general transcription and DNA repair factor IIIH core. Together, they play crucial role in cell cycle process. The objective of this study was to better understand the function of protein complex TFIIH and its subunits in *A. thaliana*, to find relationship in RNA transcription initiation and DNA repair process (nucleotide excision repair), and to analyze the possible interactions of TFB protein homologues with other proteins, analyzing of protein-protein interactions and protein-DNA interactions by using bioinformatics tools. Sequence of these 5 proteins are obtained from the Arabidopsis Information Resource. In this study, we report that TFB protein homologues, beside their involvement in DNA repair system, they are involved in many other processes such as regulation of blue-induced stomatal opening, cell cycle control, stress response, osmoregulation, heat shock response etc. In addition, we illustrated hypothetically the interaction between TFB protein homologues and DNA.

YIELD AND YIELD COMPONENTS OF COTTON (*Gossypium hirsutum* L.) AS INFLUENCED BY SOWING TIME AND DEFICIT IRRIGATION

Zenebe Mekonnen, A. Srinivas and T. Ram Prakash
Arba Minch University, College of Agricultural Sciences, Ethiopia

Abstract

Crop growth and yields could be optimized by realizing time of sowing as significant input. A field experiment was conducted to study the impact of sowing time and deficit irrigation on yield, and yield components of cotton for two kharif seasons at Rajendranagar, Hyderabad which lies in between 17°19'19.64" N and 78°24'29.89" E, India. The experiment was designed with three sowing time (24, 26 and 28 standard week), three deficit irrigation schedules (0.8, 0.6, 0.4 IW/CPE) and rainfed arranged in split plot design. Yield and yield components recorded during the study season were significantly influenced due to sowing time and deficit irrigation. Sowing of cotton at 26 standard week followed by 24 standard week and irrigation scheduled at 0.8 IW/CPE followed by 0.6 IW/CPE resulted significantly higher yield and yield components. The result is associated with the day length and temperature that cotton experience during growth period. But significantly high ginning per cent was noted under rainfed and 0.4 IW/CPE irrigation schedule plots suggesting less moisture and dry condition requirement for lint production.

Resistance in six-rowed barley genotypes to *Drechslera graminea*

Aziz Karakaya, Arzu Çelik Oğuz, Güray Akdoğan
Ankara University, Turkey

Abstract

Barley stripe disease caused by *Drechslera graminea* (teleomorph: *Pyrenophora graminea*) is an important pathogen of barley (*Hordeum vulgare*). Genetic resistance is the preferred method of control of this disease. In order to find resistance to this disease among the six-rowed barley genotypes, 31 six-rowed barley genotypes obtained from Osman Tosun Gene Bank located in Ankara, Turkey were investigated under greenhouse conditions. Resistant control cultivar Çumra 2001 and susceptible control cultivar Larende were also used. A virulent isolate of *Drechslera graminea* was used for assessing the resistance status of these cultivars and genotypes. The sandwich test was used in the experiment. Barley genotypes 11, 17, 18, 22 and 25 showed an intermediate response to *D. graminea* isolate. Genotypes 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 13, 14, 15, 16, 19, 20, 21, 23, 24, 26, 27, 28, 29, 30 and 31 showed a resistant response to *D. graminea*. Resistant control cultivar Çumra 2001 showed a resistant reaction and susceptible control cultivar Larende showed a susceptible reaction. It appears that 6-rowed barley genotypes maintained in Osman Tosun Gene Bank are useful sources of resistance to barley stripe disease.

Reactions of Some Pepper Breeding Lines and Cultivars to Resistance Breaking and Non-Resistance Breaking isolates of Tomato spotted wilt virus in Turkey

Ilyas Deligoz, Abdullah Baltaci, Miray Arli Sokmen
BLACK SEA AGRICULTURAL RESEARCH INSTITUTE, Turkey

Abstract

Tomato spotted wilt virus (TSWV) is one of the most widespread and economically important plant viruses. The use of resistant cultivars is the most effective way to minimize crop losses due to TSWV infection. All known pepper cultivars resistant to TSWV possess a single dominant resistance gene, Tsw. Disease-resistant pepper cultivars carrying Tsw gene were frequently used in the pepper-growing regions in Turkey. However, recently some TSWV strains were detected on resistant pepper varieties in Samsun and Antalya provinces of Turkey. In this study, 54 pepper breeding lines improved by the Black Sea Agricultural Research Institute and 12 commercial pepper (*Capsicum annum*) cultivars possessing the Tsw gene and 20 *Capsicum chinense* accessions were tested for reactions to resistance breaking (SC3-RB) and non-resistance breaking (SC1-NRB) isolates of TSWV. TSWV isolates were inoculated by rubbing the infected plant sap onto the leaves of pepper plants with 10 replications. Inoculated plants were inspected individually for symptom expression and tested for the virus presence by ELISA, 21 days after inoculation. The results showed that all breeding lines were susceptible to both of the isolates, 12 pepper cultivars and all *Capsicum chinense* accessions were susceptible to SC3-RB isolate of TSWV. On the other hand, 12 commercial cultivars were found to be resistant to SC1-NRB isolate. This study indicated that there is a need to identify new resistance sources against RB strains of TSWV and incorporate them into pepper breeding programs.

Potential application of herbs extracts on increase oxidative stability of cottonseed oil

Mohamed Hussein Roby, Khaled Abdel-Hamed Selim, Khalel Ibrahim Khalela, Mohamed Atef Sarhana

*Food science and technology dept., faculty of agriculture,
fayoum university, fayoum, Egypt*

Abstract

Oil oxidation is a great problem for food technologist, recently all trends aims to solve this problem. The objective of this study was to evaluate and compare the antioxidant activity of five Egyptian herbs (thyme, sage, marjoram, chamomile and fennel). Different concentrations (250, 500, 1000, and 2000 ppm) of plant extracts, BHA (200 ppm) and TBHQ (100 ppm) were added to cottonseed oils. The oxidative stability of cottonseed oils was monitoring by determining of peroxide value, anisidine value and Totox number. Results showed significant increase in oxidative stability of cottonseed oil when compared to BHA and TBHQ. The applied simple production technology and addition of herb extracts to oils enabled enhancement of their oxidative stability. The extracts are an alternative to the oils aromatized with an addition of fresh herbs, and vegetables because it did not generate additional flavors thus enabling the maintenance of the characteristic ones.

Comparative Morphological and Palynological studies of few medicinally important *Bistorta* species of family Polygonaceae from Pakistan

Ghazalah Yasmin, Mir Ajab Khan
Higher Education Department, Pakistan

Abstract

Bistorta affinis, *B. amplexicaulis* and *B. vivipara* belonging to Polygonaceae from Pakistan were subjected to comparative morphological and palynological investigations using herbarium specimens collected at different times from different localities. In terms of morphology, *B. affinis*, *B. amplexicaulis* and *B. vivipara* could easily be separated from each other by the presence of basal rosulate leaves with crenate margin in *B. affinis*, cordate leaf base, dorsifixed anther in *B. amplexicaulis* while truncate leaf base and basifixed anthers in *B. vivipara*. Two varieties of *B. amplexicaulis* are reported from Pakistan i.e., var. *amplexicaulis* collected from lower altitude and var. *speciosa* collected from higher altitudes. The pollen morphology of these three taxa of the genus *Bistorta* was investigated by light and scanning electron microscopy. The pollen grains of the examined species are mainly tricolporate and main shapes are circular (*B. vivipara*), circular to semiangular (*B. affinis*), semiangular, circular-lobate to inter-semiangular (*B. amplexicaulis*) while prolate-spheroidal, subprolate (*B. amplexicaulis* and *B. vivipara*) and spheroidal (*B. affinis*) in equatorial view with variation in size among its three species. Keys are provided for identification of the species of *Bistorta* on the basis of both morphological and palynological features.

Determination of sensitivity of four *Trichoderma* species to some fungicides used hazelnut orchards

Rahman Kushiyeve, Ismail Erper, I. Oguz Ozdemir, Elif Yildirim, Celal Tuncer
Agriculture faculty, plant protection faculty, Turkey

Abstract

In the study, the efficacy of four concentrations (0.25x, 0.5x, 1.0x and 2.0x; where x is the field rate recommended by the manufacturer) of four fungicides including active ingredients of boscalid+kresoxim methyl, fluopyram+tebuconazole, sulphur and tetraconazole used in hazelnut orchards against powdery mildew caused by *Erysiphe corylacearum* was evaluated against four isolates belonging to *Trichoderma* spp. (*T. harzianum*, *T. hamatum*, *T. atroviride* and *T. asperellum*) under laboratory conditions. As a result, this study showed that all concentrations of the fungicides significantly reduced the mycelial growth and spore germination of these isolates compared to the control ($P < 0.05$). Especially, fluopyram+tebuconazole was found to have the greatest toxicity against both mycelial growth and spore germination of all the isolates, followed by tetraconazole, boscalid+kresoxim methyl and sulphur. Fluopyram+tebuconazole was inhibited completely the mycelial growth of *T. hamatum* and *T. asperellum* and it inhibited at rates 93.97% and 89.48% mycelial growth of *T. harzianum* and *T. atroviride* at the lowest concentration. Tetraconazole, boscalid+kresoxim methyl and sulphur reduced mycelial growth at rates between 35.43-100%, 26.64-63.59% and 6.75-30.81%, respectively according to concentrations and the isolates of *Trichoderma* spp. Also, the EC50 and minimum inhibition concentration (MIC) values indicated that fluopyram+tebuconazole was more toxic to all the fungus compared to other fungicides. Consequently, the study showed that boscalid+kresoxim methyl and sulphur were less harmful against biocontrol fungi *Trichoderma* spp. than fluopyram+tebuconazole and tetraconazole.

Phenotyping of segregating generations derived from sunflower interspecific crosses (*Helianthus annuus* × *Helianthus argophyllus*)

MUHAMMAD MUBASHAR HUSSAIN

COLLEGE OF AGRICULTURE, UNIVERSITY OF SARGODHA, Pakistan

Abstract

Drought is a major production constrained in crop species and crop wild relatives are important source of resistant for biotic and abiotic stresses. A breeding program was initiated to introgress drought tolerance in sunflower through hybridization between the argophyllus and annuus species. Selection was carried out in segregating generation for high cuticular waxes, smaller leaf area, single haeding and high oil contents. The developed F5 breeding lines were compared with non-adapted elite sunflower germplasm under controlled condition. Contrasting water regimes was developed by irrigating 100% of the field capacity, or 75%, 50% and 25% of the total water applied in the control under randomized complete block design. The comparison between the two types of germplasm showed that drought resistant breeding lines showed superior traits such as leaf area, shoot weight and root shoot ratio. Several drought resistant promising lines such as UCA-2, UCA-B-5, UCA-B-27 were identified which showed superior traits such leaf area, root length and root to shoot ratio under high intensity water stress treatment (T3).

Seedling And Adult Plant Resistance To *Magnaporthe oryzae* In Some Ethiopian Rice Varieties

Abdi, Geleta Gerema

*Oromia Agriculture Research Institute
Cereal Crop Research, Ethiopia*

Abstract

Blast is one of the major diseases that affect rice production worldwide. The blast caused by hemibiotrophic fungal pathogen *magnaporthe oryzae* is one of the most devastating diseases of rice, which causes up to 100% yield loss during epidemic years. Therefore, the present study was carried out to observe the reaction of rice varieties to blast at seedling and adult growth stages. Twenty Ethiopian rice genotypes were evaluated for blast resistance at seedling stage under glass-house conditions and at adult stage under field condition of Bako agricultural research center. Both experiments were evaluated by inoculated with a conidial suspension of one *P. oryzae* isolate obtained from susceptible rice varieties. In the seedling stage, the level of qualitative resistance was assessed based on the qualitative and quantitative lesion. The number of sporulating lesions and the number of leaves with at least one sporulating lesion per plant were considered as measures for evaluation of qualitative resistance at seedling. In the adult plant stage, quantitative resistance was evaluated from infection type and area under disease progress curve (AUDPC) was calculated to assess the level of quantitative resistance in 20 rice varieties. Therefore, from the study, we confirmed that NERICA cultivars had shown low disease pressure compared with other tested varieties at the seedling stage. While, the varieties, Chewaka and Edget were shown adult plant resistance to leaf and panicle blast. Yield losses of rice varieties due to the blast was lower on adult resistance cultivars than on susceptible cultivars. The severe yield reduction was obtained from Superica-1, which is highly susceptible to both leaf and panicle blast at adult. In contrary, maximum grain yield was obtained from Chewaka and Edget varieties having a high level of adult resistance to both leaf and panicle blast. Considering the disease response and yield potential, varieties Chewaka and Edget showed the lowest blast infection and highest grain yield. These genotypes are suitable candidates for utilization in yield and blast resistance improvement programs in western Ethiopia

Solamargine and Solasonine production by plant parts of *Solanum incanum* from Oman and their Biological Activity

Mudawi, Elsadig A. Eltayeb
SULTAN QABOOS UNIVERSITY
BIOLOGY

Abstract

Traditionally important medicinal plant *Solanum incanum* is a rich source of cytotoxic glycoalkaloids (GAs) such as solamargine and solasonine. As a potential source of compounds for the synthesis of steroids, study of the content of these glycoalkaloids during developmental stages of plant is worthy. Quantitative estimation of solasonine and solamargine content using optimized isolation process and newly developed and validated HPTLC method in different parts of *S. incanum* plants at different developmental stages and comparing changes in the whole-plant glycoalkaloids profile during development of plants grown in Oman was carried out. Solamargine and solasonine produced well separated compact bands at R_f values 0.26 and 0.14, respectively on silica gel HPTLC plate using chloroform: methanol: 5% ammonia (7: 3: 0.5, v/v/v) after visualization using anisaldehyde sulphuric acid reagent. Chromatograms scanned at 530 nm wavelength and method was found linear ($r^2 \times 0.9962$) for 50 ó 2000 ng/spot for both drugs. The validated method was used for analysis of glycoalkaloids in small, young, immature and mature leaves as well as stem and root parts up to the 40th week of plants growth, showing rich concentration of glycoalkaloids with variation at different stages of development. Hence, highlighting the importance of developmental stages of particular organ and the overall age of the plant when harvesting for these GAs from *S. incanum* plants.

Anticancer activity of these glycoalkaloids has been studied; Solamargine was capable of inhibiting proliferation of melanoma cancer cell lines at a concentration of 10⁻⁶ M but not the benign melanoma and normal cells.