



14th International Conference on

Agriculture & Horticulture

August 15-16, 2019 | Rome, Italy

Scientific Tracks & Abstracts Day 1

Agri 2019

SESSIONS


Agricultural Engineering | Agriculture & Environment | Greenhouse & Horticulture | Agricultural Production Systems | Fertilizer & Pesticide | Crop Protection & Entomology

Chair: Ze-Chun Yuan | Agriculture and Agri-Food Canada | Canada


Co-Chair: Junzeng Xu | Hohai University | China

SESSION INTRODUCTION

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- Title:** Evaluation of ecosystem services by paddy fields under different irrigation management in Taihu Lake region of China
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- Title:** Application of the evaporative fraction in estimating daily evapotranspiration based on hourly measurement in water-saving irrigated rice field
Xiaoyin Liu | Hohai University | China



Title: Regulations of serotonin and dopamine in the salivary glands of the red palm weevil, *Rhynchophorus ferrugineus* (Coleoptera: Dryophthoridae) during feeding and starvation
Nurul Wahida Othman | Universiti Kebangsaan Malaysia | Malaysia



Title: Impact of shallow barrier isolation layer and vertical salinity difference on tomato water and salinity production function
Sheng Chen | Hohai University | China

Title: Development of rice for unfavorable ecosystems
Noraziyah Abd Aziz Shamsudin | Universiti Kebangsaan Malaysia | Malaysia



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Measurement-model fusion for global total atmospheric deposition

Lorenzo Jesus Labrador

World Meteorological Organization, Switzerland

The World Meteorological Organization's (WMO) Global Atmosphere Watch (GAW) Programme coordinates high-quality observations of atmospheric composition from global to local scales with the aim to drive high-quality and high-impact science while co-producing a new generation of products and services.

Exposure to atmospheric ozone is a major factor in crop yield losses in many countries, resulting in billions of US \$ in losses and having implications for future food security. Likewise deposition of excess atmospheric nitrogen can result in eutrophication of freshwater bodies, with potential impacts on the health of water bodies used for irrigation. Conversely, agriculture is the single largest contributor of ammonia pollution as well as emitting other nitrogen compounds, some of which can make it into the atmosphere and be deposited, potentially affecting crops elsewhere.

To better understand and address the issues posed by deposition of atmospheric pollutants, WMO has a mandate to produce global maps of wet, dry and total atmospheric deposition for important atmospheric chemicals to enable research into biogeochemical cycles and assessments of ecosystem, food security and human health effects.

The most suitable scientific approach for this activity is the emerging technique of measurement-model fusion for total atmospheric deposition. This technique requires global scale measurements of atmospheric trace gases, particles, precipitation composition and precipitation depth, as well as predictions of the same from global/regional chemical transport models. The fusion of measurement and model results requires data assimilation and mapping techniques.

The resulting maps of global total deposition of atmospheric pollutants can provide agriculture and good experts, as well as policy-makers, an overview of where deposition of atmospheric pollutants will have the largest effects on agriculture and food production on a global scale.

Recent Publications

1. Schwede, D., Cole, A., Vet, R and Lear, G., Ongoing US-Canada collaboration on nitrogen and sulfur deposition, EM - A&WMA, June 2019.
2. Wu, Z.Y.; Schwede, D.; Vet, R.; Walker, J.; Shaw, M.; Staebler, R.; Zhang, L. Evaluation and intercomparison of five North American dry deposition algorithms at a mixed forest site; *J. Adv. Mod. Earth Sys.* 2018, 10, 1571-1586
3. Kharol, S.K.; Shephard, M.W.; McLinden, C.A.; Zhang, L.; Sioris, C.E.; O'Brien, J.M.; Vet, R.; Cady-Pereira, K.E.; Hare, E.; Simons, J.; Krotkov, N.A. Dry deposition of reactive nitrogen from satellite observations of ammonia and nitrogen dioxide over North America; *Geophys. Res. Letts.* 2018, 45, 1157-1166.
4. Vet, R.; Artz, R.S.; Carou, S.; Shaw, M.; Ro, C.-U.; Aas, W.; Baker, A.; Bowersox, V.C.; Dentener, F.; Galy-Lacaux, C.; Hou, A.; Pienaar, J.J.; Gillett, R.; Forti, M.C.; Gromov, S.; Hara, H.; Khodzher, T.; Mahowald, N.M.; Nickovic, S.; Rao, P.S.P.; Reid, N.W., A global assessment of precipitation chemistry and deposition of sulfur, nitrogen, sea salt, base cations, organic acids, acidity and pH, and phosphorus, *Atmospheric Environment*, vol. 93, 3–100, 2014 DOI: doi:10.1016/j.atmosenv.2013.10.060
5. Robichaud, A.; Ménard, R.; Zaitseva, Y.; Anselmo, D. Multipollutant surface objective analyses and mapping of air quality health index over North America; *Air Qual. Atmos. Health* 2016, 9 (7), 743-759.

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Biography

Lorenzo Jesus Labrador is a Scientific Officer at the world Meteorological Organization's (WMO) Global Atmosphere Watch (GAW) Programme. He currently coordinates the activities of three Scientific Advisory Groups to WMO and also coordinates the research-to-services Measurement-Model-Fusion project, aimed at producing global maps of total deposition of atmospheric pollutants on an operational or semi-operational basis. Lorenzo trained as a physicist and went on to obtain a Ph.D in atmospheric Sciences from the Max Planck Institute for Chemistry in Mainz, Germany and the University of Heidelberg in Germany in 2005. After working in academia researching atmospheric chemistry for a number of years, Lorenzo moved to the UK's Met Office in 2015 to work in the Satellite Applications Group, where he worked on developing deep convection products using satellite imagery. In 2018, Lorenzo started working in WMO's GAW programme. Lorenzo has a number of publications in peer-reviewed journals, dealing mostly on the subject of atmospheric chemistry.

llabrador@wmo.int

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Short-term response of soil N₂O and CO₂ emissions and their global warming potentials to irrigation salinity

Qi Wei

Hohai University, China

Irrigation of brackish water (2-5 g L⁻¹) instead of fresh water, modify soil microbial activities such as carbon and nitrogen cycle, and thus affect soil emissions of nitrous oxide (N₂O) and carbon dioxide (CO₂). However, the effects of irrigation salinity on global warming potentials (GWPs) caused by N₂O and CO₂ emissions are rarely investigated. Pot experiments with three irrigation salinity levels (2, 5 and 8 g L⁻¹) were designed to study the responses of GWPs and the contribution of N₂O and CO₂ to various salinity levels. Results indicated that soil CO₂ flux reduced with the increase of irrigation salinity and was obviously lower than that from fresh water irrigated soil (CK). By comparison, for N₂O, 2 and 8 g L⁻¹ saline water decreased the cumulative fluxes by 22.6% and 39.6% compare to CK (*p*<0.05), respectively, whereas 5 g L⁻¹ saline water enhanced it by 87.7%. Overall, the cumulative GWPs of N₂O and CO₂ from irrigated soils using saline water (2-8 g L⁻¹) were 3.2%-51.1% lower than that from CK, with the relative change to CK at 2 g L⁻¹ salinity level significantly higher than those at 5 g L⁻¹ salinity level. These results suggested that the degree to which soil Ec affected soil microbial processes might vary significantly among irrigation salinity ranges. Reducing the salinity of irrigated brackish water can mitigate soil GHGs and provides a potential strategy for solving water resources scarcity and reducing soil salt accumulation.

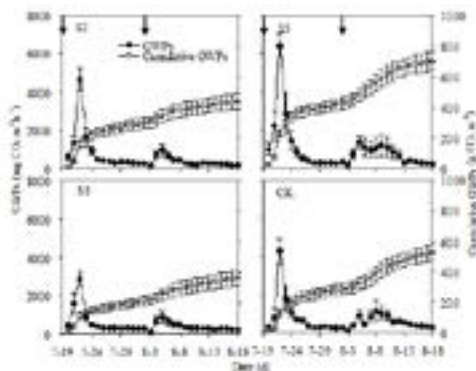


Fig. 1. The GWPs of N₂O and CO₂ under different treatments (arrows represent irrigation events, vertical bars indicate standard deviation, a=1, S2, S5 and S8 represent 2, 5 and 8 g L⁻¹ saline water irrigated treatment, CK represent fresh water irrigated treatment).

Recent Publications

- Wei Qi, Xu Junzeng*, Yang Shihong, Qi Zhiming, Wang Yanhua, Liao Linxian (2017). Partial wetting irrigation resulted in non-uniformly low nitrous oxide emissions from soil. *Atmospheric Environment*.161:2 00-209.
- Wei Qi, Xu Junzeng*, Yang Shihong, Liao Linxian , Jin Guangqiu, Li Yawei, Fazli Hameed (2018). Subsurface watering resulted in reduced soil N₂O and CO₂ emissions and their global warming potentials than surface watering. *Atmospheric Environment*. 173: 248-255.

3. Wei Qi, Xu Junzeng*, Li Yawei, Liao Linxian, Liu Boyi, Jin Guangqiu, Fazli hameed (2018). Reducing surface wetting proportion of soils irrigated by subsurface drip irrigation can mitigate soil N₂O emission. International Journal of Environmental Research and Public Health. 15 (12), 2747.
4. Wei Qi, Xu Junzeng*, Liao Linxian, Jin Guangqiu, Li Yawei, Wang Haiyu, Shah Fahad Rahim (2018). Water salinity should be reduced for irrigation to minimize its risk of increased soil N₂O emissions. International Journal of Environmental Research and Public Health.15(10), 2114.
5. Xu Junzeng, Wei Qi*, Yang Shihong, Liao Linxian, Qi Zhiming, Wang Weiguang (2018). Soil degassing during watering: an overlooked soil N₂O emission process. Environmental Pollution. 242: 257-263.

Biography

Qi Wei, Male, Postdoctor in Hohai University. Mainly focused on High efficiency local irrigation and its greenhouse gas emissions so on, and published more than 30 papers in the last 5 years.

weiqi8855116@163.com

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Two QTLs controlling clubroot resistance identified from bulked segregant sequencing in pakchoi (*Brassica campestris* ssp. *chinensis* Makino)

Hongfang Zhu and Yuying Zhu

Shanghai Academy of Agricultural Sciences, China

Clubroot, caused by *Plasmodiophora Brassicae*, is a serious soil-borne disease in worldwide. In recent years, progression of clubroot is rapid and serious in Shanghai, China. In this study, The inheritance of clubroot resistance (CR) were determined in pakchoi using F₂ segregation population that were developed by crossing highly resistant line 'CR38' and susceptible line 'CS22'. Two novel QTLs, *qBrCR38-1* and *qBrCR38-2*, was identified by BSA-seq (Bulked Segregant Sequencing) resistant to *P. brassicae* physiological race 7. Two significant peak *qBrCR38-1* and *qBrCR38-2* were observed by three statistical methods between interval of 19.7-20.6Mb in chromosome A07 and 20.0-20.6Mb in chromosome A08, respectively. In addition, Polymorphic SNPs identified within target regions were converted to kompetitive allele-specific PCR (KASP) assays. In target regions of *qBrCR38-1* and *qBrCR38-2*, there were twenty SNP sites identified, eleven KASP markers of which are significantly associated to CR ($P < 0.05$). Seven candidate genes were identified and found to be involved in disease resistance (TIR-NBS-LRR proteins), defense responses of bacterium and fungi and biotic/abiotic stress response in the target regions harboring the two QTLs. Two novel QTLs and candidate genes identified from the present study provide insights into the genetic mechanism of CR in *B.rapa*, and the associated SNPs can be effectively used for marker-assisted breeding.



Figure 1. phenotype of the parents: CR38 (Clubroot resistance) and CS22 (Clubroot susceptible). Plants were inoculated with 7th physiological race of *P. brassicae*.

Recent Publications

1. Phukan, U. J., Jeena, G. S. & Shukla, R. K. Wrky Transcription Factors: Molecular Regulation and Stress Responses in Plants. Front Plant Sci. 7, 760 (2016).

2. Zhang, H. et al. Resistance to Plasmodiophora Brassicae in Brassica Rapa and Brassica Juncea Genotypes From China. *Plant Dis.* 99, 8-14 (2015).
3. Feng, J., Jiang, J., Feindel, D., Strelkov, S. E. & Hwang, S. F. The Gene Cr811 is Present Exclusively in Pathotype 5 and New Emerged Pathotypes of the Clubroot Pathogen Plasmodiophora Brassicae. *Eur J Plant Pathol.* 145, 615-620 (2016).
4. Van, O. G. et al. Structure-Function Analysis of the Nb-Arc Domain of Plant Disease Resistance Proteins. *J Exp Bot.* 59, 1383 (2008).
5. Phukan, U. J., Jeena, G. S. & Shukla, R. K. Wrky Transcription Factors: Molecular Regulation and Stress Responses in Plants. *Front Plant Sci.* 7, 760 (2016).

Biography

Hongfang Zhu has working on Shanghai Academy of Agricultural Sciences since 2009. She has mainly engaged in the collection, arrangement and evaluation of pakchoi and Chinese cabbage germplasm resources, the selection of new varieties, the breeding of good species, the study of cultivation techniques, and the demonstration and promotion of the germplasm.

zhf334480@126.com

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Evaluation of ecosystem services by paddy fields under different irrigation management in Taihu Lake region of China

Shihong Yang, Junzeng Xu, Xiaoyin Liu and Qi Wei
Hohai University, China

Statement of the Problem: Irrigation mode is an important factor in regulating ecosystem services from croplands. However, there are no studies on the effects of rice irrigation mode practiced on the ecosystem service value (ESV) of paddy fields. Methodology & Theoretical Orientation: Thus, we present the results of a field experiment study of ecosystem services and their economic values provided by paddy fields under different irrigation modes in Taihu Lake region of China. Conclusion & Significance: The results showed that nine kinds of rice paddy ecosystem services were clearly affected by irrigation mode of rice. Compared to traditional flooding irrigation (FI), controlled irrigation (CI) led to more than half reduction of irrigation water input while maintaining high rice yield. The positive ESV of CI paddy fields were reduced by 10.00% due to the reduction of air temperature, groundwater conservation and soil organic matter accumulation values. Meanwhile, application of water-saving irrigation also reduced negative ESV of paddy fields by 38.20% compared to FI treatment. CI management significant reduced the negative ESV of agricultural non-point source pollution and water resource depletion by 61.27% and 25.47%. In summary, total ESV of CI paddies were 43.41×10^3 CNY ha⁻¹, reduced on average by 3.43% compared to FI fields. According to the results of this study, 4.85 billion m³ of irrigation water will be saved and 1.83 billion CNY of ecosystem service value provided by gas exchange in paddy field will be increased in the event of a comprehensive promotion of rice water-saving irrigation in the Taihu Lake region of China. Our results suggest that CI can increase the ESV of paddy fields while drastically reducing irrigation water input and ensuring the crop yields.

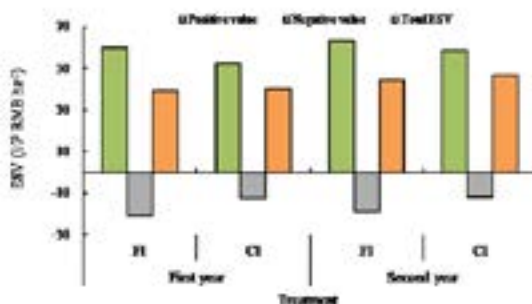


Figure1: ESV of paddy fields under different water managements

Recent Publications

1. Zhang ZH, Zhong YM, Yang JP (2019) Effect of nitrogen fertilizer rates on carbon footprint and ecosystem service of carbon sequestration in rice production. *Science of the total environment*. 670:210-217.
2. Carrijo DR, Lundy ME, Linqvist BA (2017) Rice yields and water use under alternate wetting and drying irrigation: A meta-analysis. *Field Crops Research*. 203, 173-180.
3. Fang FP, Feng JF, Li FB, Peng SB (2017) Impacts of the north migration of China's rice production on its ecosystem

service value during the last three decades (1980-2014). *Journal of Integrative Agriculture*. 16(1), 76-84.

4. Natuhara Y (2013) Ecosystem services by paddy fields as substitutes of natural wetlands in Japan. *Ecological Engineering*. 56, 97-106.
5. Shao Y, Chen Z, Xiao HY, et al (2019) Integrating environmental parameters and economic benefits to analyze the ecological agriculture (EA) application in the mountain rice paddy system of Chongqing, China. *Environmental Science Europe*. 31:22.

Biography

Shihong Yang received his PhD from Hohai University in 2011. Since 2011, he has been a faculty member as a Postdoctor (2011-2013), Associate Professor (2013-now) in Hohai University. His interests include water-saving irrigation technologies and their environmental effect. He has published >50 peer-reviewed journal and conference papers. He received a first prize of national science and technology progress awards, five provincial or ministerial science and technology progress awards, and several individual awards. As the PI, he has received >12 governmental funds.

ysh7731@hhu.edu.cn

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Morphologic and quality characteristics of cultivated einkorn wheat (*Triticum monococcum* L. subs. *monococcum*) lines sown in autumn and spring seasons

Servet Kefi

Kastamonu University, Turkey

Statement of the Problem: As being the first cultivated wheat in the Fertile Crescent, diploid einkorn wheat ($2n=2x=14$, AA), *Triticum monococcum* L. subs. *monococcum*, was domesticated 9500 years ago in Karacadag Mountains of South-East Turkey. Nowadays it has been grown in only marginal lands of Turkey, Caucasus, Europe and Morocco. After having disappeared because of its replacement by high yielding modern wheat cultivars, recently einkorn wheat has been re-introduced in some countries, especially for organic farming, due to its high resistance to pests and diseases, adaptation to harsh climates, ability to provide acceptable yields on poor soils even with low/without inputs and high nutritional value. In order to maintain and utilize the genetic diversity of einkorn wheat, it is necessary to develop in situ conservation program to provide continuity of cultivation of its landraces; characterizing, analyzing and documenting of its accessions and identifying its genes for useful agronomical and nutritional traits to employ in breeding programs.

Materials and Methods: Local 45 einkorn wheat lines, selected from 500 single rows planted by each single spikes collected from 50 farmers' fields in Kastamonu/Turkey, were sown in autumn (9 November 2017) and in spring (20 February 2018) and were harvested on 30-31 July 2018 and on 8 August 2018, respectively. Morphologic and agronomic traits were observed and measured during growing period of plants and quality properties of harvested seeds were determined by using "Single Kernel Characterization System (SKCS)".

Findings: All of the einkorn wheat lines in the trial showed "facultative" growth habit, flowering well when sown both in autumn and in spring. Although lines sown in autumn had more yield, the same lines sown in spring provided higher quality and more resistance to lodging due to being shorter.

Conclusions: Einkorn wheat lines sown in autumn and in spring seasons showed a significant variation for traits, which can be used for einkorn breeding program.



Figure 1: General view of einkorn wheat lines on 12 July 2018 (lines in front block were sown in autumn 2017 and lines in behind blocks were sown in spring 2018)

Recent Publications

1. Alvarez, J.B., Moral, A., Martin, L.M. (2006) Polymorphism and genetic diversity for the seed storage proteins in Spanish cultivated einkorn wheat (*Triticum monococcum* L. subsp. *monococcum*) Genet Resour Crop Evol 53:1061-1067.
2. Empilli, S., Castagna, R., Brandolini, A. (2000) Morpho-agronomic variability of the diploid wheat *Triticum monococcum* L. Plant Genet Resour Newsl 124:36-40.
3. Kilian, B., Ozkan, H., Walther, A., Kohl, J., Dagan, T., Salamani, F., Martin, W. (2007) Molecular diversity at 18 loci in 321 wild and 92 domesticate lines reveal no reduction of nucleotide diversity during *Triticum monococcum* (einkorn) domestication: implications for the origin of agriculture. Mol Biol Evol 24(12):2657-2668.
4. Taddei, F., Gazza, L., Conti, S., Muccilli, V., Foti, S., Pogna, N.E. (2009) Starch-bound 2S proteins and kernel texture in einkorn, *Triticum monococcum* subsp. *monococcum*. Theor Appl Genet 119:1205-1212.
5. Zaharieva, M., Monneveux, P. (2014) Cultivated einkorn wheat (*Triticum monococcum* L. subsp. *monococcum*): the long life of a founder crop of agriculture. Genet Resour Crop Evol 61:677-706.

Biography

Servet Kefi has completed her B.Sc. in 1983 and M.Sc. in 1985 at Agricultural Faculty of Aegean University, TURKEY and Ph.D. in 1995 in Dept. of Agriculture & Forestry, Univ. of Nebraska, Lincoln, USA. She had worked as extension specialist, researcher and director, respectively in the Ministry of Agriculture and Rural Affairs (1986-2004); General Secretary of the Executive Committee of Agriculture, Forestry & Veterinary Research Grant Group of the Scientific & Technological Research Council of Turkey, TÜBİTAK (2004-2007); Turkish Delegate of Food Quality & Safety Programme Committee in EU 6th Framework Programme (2005-2007) and Chair of Food & Agriculture Domain Committee in COST (16.05.2006-14.02.2007). Currently she is giving lectures at Kastamonu Univ., Fac. of Engineering and Architecture, Dept. of Genetics and Bioengineering. Her research areas include plant tissue culture applications (mainly in potato); plant growing, breeding and seed production techniques (potato & wheat). She has published more than 15 papers.

servet.kefi@gmail.com
skefi@kastamonu.edu.tr

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The role of UF/IFAS extension in tropical agriculture & horticulture

E. Vanessa Campoverde

University of Florida/ IFAS Extension, USA

Statement of the Problem: United States land grant universities have a third mission in addition to research and teaching, called Extension. At the University of Florida (UF) Extension is located within the Institute of Food and Agricultural Sciences (IFAS) and is called UF/IFAS Extension. Extension agents/educators provide research-based, practical information to agricultural producers and other clients. South Florida's subtropical climate allows for production of a variety of crops, however, the same favorable environmental conditions are also ideal for many production challenges year-round.

Methodology & Theoretical Orientation: UF/IFAS Extension faculty developed, implemented and evaluated educational programs outcomes and impacts in commercial agriculture production for five years in south Florida. Programs delivered included classroom workshops, one-on-one consultations and site visits to nurseries.

Findings: The UF/IFAS Commercial Agriculture/Ornamental Extension Agent trained 2,245 participants in 64 Integrated Pest Management (IPM) workshops conducted in English and Spanish. 652 participants out of 1,165 (55.9%) answered a survey and reported an average class satisfaction of 4.4 out of 5.0 Likert scale (Where 1= least, 5= greatest value) and knowledge gain of 4.0 out of 5.0 in identification of pests threatening south Florida agriculture. Training covered such pests as Oriental Fruit Fly (OFF) and Giant African Land Snail (GALS), including their management.

Conclusion & Significance: To date UF/IFAS Extension continues to provide timely and relevant tropical agricultural education on a variety of topics to producers who rely on unbiased and research-based educational trainings. It is estimated than for every \$1 invested in agricultural research and Extension, there is a return of \$20 to the community.



Figure1: UF/IFAS Extension Agent providing trainings at plant production areas

Recent Publications

1. Gazis, R., Poudel, B., Dey, K., Zhang, S., Palmateer, A.J., Campoverde, E.V., Baker, C. and Adkins, S. 2018. "First report of cactus virus X in *Hylocereus undatus* (dragon fruit) in Florida". *Plant Disease*. 102. <https://doi.org/10.1094/PDIS-05-18-0725-PDN>
2. Da Silva S., Babu B., Paret M. L., Knox G., Iriarte F., Riddle B., Orwat M., Steed S. T., E. V. Campoverde, and

Folimonova S. Y. 2018. "Rose Mosaic Virus: A Disease Caused by a Virus Complex and Symptoms on Roses and Management Practices". Publication # PP338. Gainesville: University of Florida Institute of Food and Agricultural Sciences from <http://edis.ifas.ufl.edu/pdf/PP/PP33800.pdf>

3. Campoverde, E.V., Sanahuja, G. and Palmateer, A.J., 2017. A high incidence of Pythium and Phytophthora diseases related to record-breaking rainfall in south Florida. *HortTechnology*, 27(1), pp.78-83.
4. Campoverde E.V., Marble, S.C. and J. Norcini G. 2016. "Herbicidas Postemergentes para Uso en Ornamentales" (Postemergent Herbicides for Use in Ornamentals in Spanish). Publication #ENH95-S. Gainesville: University of Florida Institute of Food and Agricultural Sciences from <http://edis.ifas.ufl.edu/ep533>
5. Campoverde E.V. 2018. "Mosca Oriental de la Fruta" (Oriental Fruit Fly in Spanish) Fact Sheet: N°01-2018. http://sfyl.ifas.ufl.edu/media/sfylifasufledu/miami-dade/documents/nursery-production/OrientalFlyFactSheetSPANISH_Final1.pdf

Biography

E. Vanessa Campoverde is a University of Florida/IFAS Extension Educator/Agent. Vanessa's work is focused on empowering her clientele with research-based trainings including but not limited to Integrated Pest Management (IPM), Best Management Practices (BMP), work safety and financial literacy. Prior to joining UF/IFAS in 2008, she worked at the International Potato Center in Peru. Vanessa holds a master's degree in Plant Pathology from UF and a Bachelor's in Biological Sciences from Universidad Nacional Mayor de San Marcos. She is a member of Florida and National Association of County Agricultural Agents, Association of International Agricultural and Extension Education, American Society for Horticultural Science, American Association of Pesticide Safety Educators, The American Phytopathological Society and Epsilon Sigma Phi Associations, where she has served on several committees. Vanessa was also the 2015 UF/IFAS Award for Excellence in Internationalizing Extension recipient. In her free time, Vanessa enjoys travelling and try international cuisine.

evcampoverde@ufl.edu

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Technology improves future pre and post-harvest treatments for agriculture

Sarah Bliss

Wobelea Pty Ltd, Australia

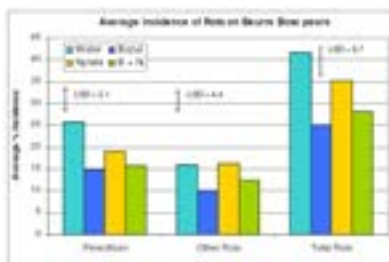
Quality water, filtration and minimal chemical use is the future way to provide healthy safe produce. Focus has shifted dramatically as concerns with Food Safety and Quality Control become important to growers and consumers.

Understanding the chain of food handling, providing education and solutions, using chemicals within correct parameters and ensuring wash or irrigation water has reduced pathogen loading will enhance Food Safety and reduce risk of crop loss and human health scares.

Our research shows advantages of using disinfectant actives to reduce level of pathogens found pre harvest, post-harvest, on equipment and in storage and transport. Disinfection systems that incorporate sand filtration and automatic chemical dosing are effective in reducing pathogen loading whilst controlling the amount of chemical used. Minimal by-products (dependant on disinfectant used) are formed in recirculated wash water and can be maintained by the addition of fresh water. Alternatively run to waste systems can be used. Water that passes through sand filters or slow speed filtration (IHD Knoxfield, 1999) effectively removes a large percentage of fungi and bacteria loading. Efficacy was shown at reducing Fungi spores from 60 spores/ml to 10 spores/ml when a sand filter with flocculant was used.

Our research growth consists of reviewing farm management practises, ensuring water quality is free of pathogens and developing a new formulation based on known food additives and other actives, as a pre harvest and post-harvest spray to remove pathogen loading. Water quality is of utmost importance in the growing and washing of produce. Consumers demand quality produce that is free of harmful pathogens.

Conclusion: Combining the use of filtration and disinfectants significantly reduces pathogen loading on wash water and irrigation water. Education is required on chemical selection, defining critical control points from growing crops, washing and packing, storage and transport to end customer.



Note: Trials and report prepared by Agriculture Victoria Services, Attwood. (2009) in conjunction with Wobelea Pty Ltd.

Biography

Sarah Bliss has been involved with Wobelea Pty Ltd since 1991. During this time the first post-harvest disinfectant for agricultural fruit and vegetable washing in Australia was developed by Wobelea Pty Ltd. In recent years Sarah has worked on developing new technology based on food additives for pre and post-harvest applications in the agricultural industry. Sarah has commented on the issues surrounding Melon Safety and pathogens affecting Mango's and is passionate about ensuring new knowledge is passed onto growers. Sarah has worked ensuring recent field trials of the new technology were developed in conjunction with Peracto Pty Ltd, Tasmania (2017-18) to ensure efficacy and residue data were collected to support registration. Sarah is passionate about correctly identifying critical control points from paddock to plate and using new technology to disinfect water to allow for future opportunities to bridge the gap between technology and growers. Knowledge is key to ensure quality water is used on growing crops to reduce harmful pathogens in the field, thus reducing the pathogen loading in the packing, storing and transport of produce.

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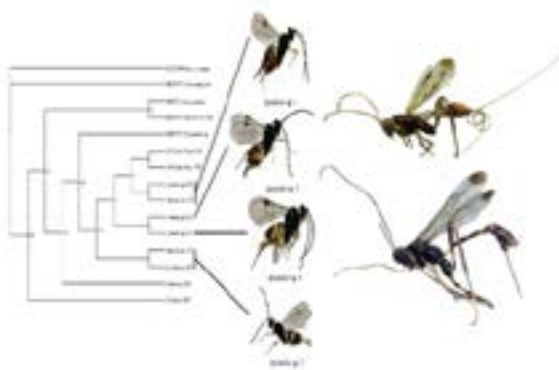
Highlight on the Parasitoids species (Hymenoptera) of important crops insect pests in Malaysia

Salmah Yaakop¹, Safiah Shariff¹, Nurul Jannah Ibrahim¹, Siti Zafrah Ghazali¹, Aমেয়রা Aman Zuki¹, Muhammad Azmi Mohammad¹, Suhana Yusof¹, Abdullah Muhaimin Muhammad Din¹, Rabibah Razali¹, Wan Nur Madihah Wan Abdul Halim¹, Sharifah Zulaikha Syed Ahmad², Muhamad Azmi Mohammed², Badrul Munir Md-Zain¹, Izfa Riza Hazmi and Amirah Aqilah Badrulisham

¹Universiti Kebangsaan Malaysia, Malaysia.

²Universiti Putra Malaysia Bintulu Campus, Malaysia

Parasitoids are group of insects that play an important role in the agricultural ecosystem. They play a pivotal roles by laying eggs inside their host, get nutrient from the host and consequently kill the hosts. Their presence in the field are highly significant and influences yield production and sustainability of the ecosystem. Through several series of studies (2011-2018), we have presented and compiled several significant parasitoids that potential to be applied as natural enemies or parasitoids on several insect pests that infesting crops e.g. oil palm, cocoa, coconut, paddy, rice storage, fruits, vegetables etc. in Malaysia. The parasitoids for the pests of *Bactrocera* spp., stem borers, storage pests, bagworms, cocoa pod borer (CPB), sap beetles, Red Palm Weevil (RPW) and many more have been performed based on samples from various localities and populations throughout the Peninsular Malaysia. The identification status of the species has been verified based on molecular data in both species, the pests and the parasitoids. Besides that, phylogenetic analysis implemented and helps to investigate the species relationships, and promotes accurate classification and identification. Furthermore, the coevolution and evolution of the species also obtained to reveal some information on the particular species. Besides that, genetic diversity and species variation information are also necessary for population genetic study to enhance understanding on adaptability and survivability of a species. Therefore, the aim of this study is to update the current information of the Malaysian insect parasitoids-pests species for creating the best strategy towards sustainable species management.



Recent Publications

1. Aman-Zuki A. Mohammed MA., Yaakop S. 2019. Phylogenetic relationships of five Oriental *Apanteles* species-groups (Hymenoptera: Braconidae: Microgastriinae) by concatenating four molecular markers. Journal of Asia-

Pacific Entomology. 22(1): 341-352.

2. Halim M., Aman-Zuki A., Syed Ahmad SZ., Md. Zain, B.M., Yaakop S. 2018. Exploring the abundance and DNA barcode information of eight parasitoid wasps species (Hymenoptera), the natural enemies of the important pest of oil palm, bagworm, *Metisa plana* (Lepidoptera: Psychidae) toward the biocontrol approach and it's application in Malaysia. Journal of Asia-Pacific Entomology 21(4): 1359-1365.
3. Nur -Atiqah Lalaludin, Faszly Rahim & Salmah Yaakop. 2018. Termite associated to oil palm stands in three types of soils in Ladang Endau Rompin, Pahang, Malaysia Sains Malaysiana 47(9)(2018): 1961-1967
4. Muhamad Azmi MOHAMMED, Ameyra AMAN-ZUKI, Nurul Othman WAHIDA, Yohsuke TAGAMI, Salmah YAAKOP. 2018. The role of a novel *Wolbachia* (Rickettsiales: Anaplasmataceae) synthetic peptide, WolFar, in regulating prostaglandin levels in the hemolymph of *Acheta domesticus* (Orthoptera: Gryllidae). Turk J Zool. 42: 1-10
5. Suhana Y, Mohd Shamsudin O, Sulaiman Z., Ahmad Zainuri MD, Hasan S. and Yaakop S. 2018. Effects of gamma irradiation on egg hatchability, pupation, and adult emergence of the immature stages of the oriental fruit fly, *Bactrocera dorsalis* (Hendel) (Diptera: Tephritidae) from Malaysia Serangga. 23(2): 259-267

Biography

Salmah Yaakop, PhD, is a senior lecturer at the Centre for Insect Systematics, School of Environmental Science and Natural Resources, Faculty of Science and Technology (FST), Universiti Kebangsaan Malaysia (UKM). Her expertise is in the field of insects taxonomy and molecular systematic, specialising in parasitoids (Braconidae: Hymenoptera) and cicadas (Cicadidae : Homoptera). She has obtained her PhD degree from State University of Groningen, The Netherlands. She has published 83 reputed journals and conferences papers and actively conducting research on insects which have significance in agricultural areas.

salmah78@ukm.edu.my

Notes:

Application of the evaporative fraction in estimating daily evapotranspiration based on hourly measurement in water-saving irrigated rice field

Xiaoyin Liu
Hohai University, China

Evaporative fraction (EF), which is known to exhibit variation in response to changes in crop species, soil and meteorologic conditions, plays an important role in interpreting the components of energy budget and estimating evapotranspiration (ET), while such information is scarce for humid rice fields. The present study examines the pattern of hourly, daytime and daily EF after monitoring energy components by eddy covariance for water-saving irrigated (WSI) rice paddies of 2015 and 2016, and estimates the daily ET by an improved EF up-scaling method in the subtropical monsoon climate region of East China. Main results indicate that EF exhibits obviously greater than the reports that from upland crops. Diurnally, hourly EF is deemed as an approximately concave-up shape in different growth stages of rice season. The seasonal average value varies gently, with a minimum around 10:00–11:00 AM. Seasonally, the mean daytime EF for the whole growth stage is 0.86, 7% lower than the daily value. Daily EF exhibits mostly higher than 0.8 except later yellow ripening period, approaching 1.0 in the milk stage. In addition, differences are noted in the results with respect to the daily ET estimation by EF up-scaling method. The estimated daily ET ($ET_{EF,d}$) from hourly EF during 10:00–11:00 h is highly correlated to the measured ET (ET_{true}) by the weighed micro-lysimeters though the $ET_{EF,d}$ value is underestimated. Such a considerable gap serves in forming a relationship between $ET_{EF,d}$ and $ET_{true,d}$ that is, by simply multiplying the representativeness ET value based on the EF up-scaling method by a correction procedure calibrated for this region. In conclusion, an improved EF up-scaling method is proposed for estimating effective daily ET.

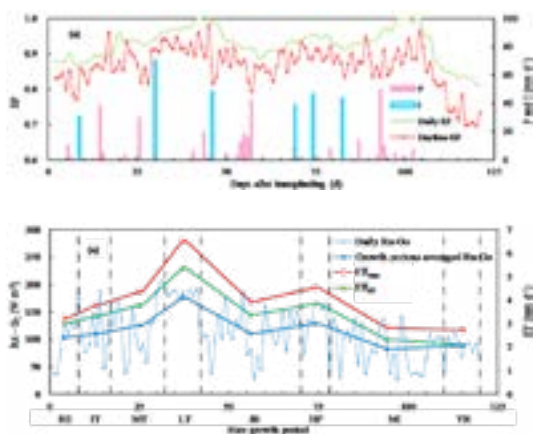


Fig. 1 Behavior of the daily and daytime evaporative fraction (EF) and corresponding precipitation (P) and irrigation (I) during the rice season of (a) 2015 and (b) 2016

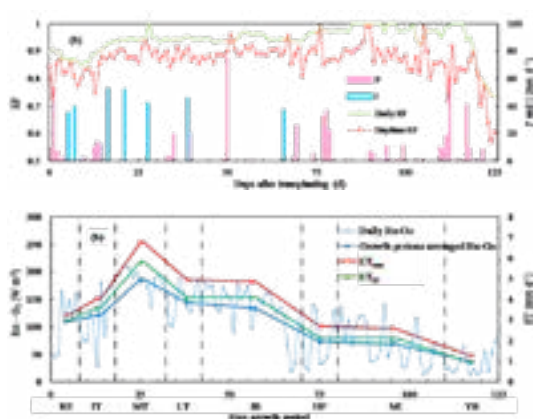


Fig. 2 Behavior of the measured (ET_{true}) and simulated ET (ET_{EF}) (based on 10:00–11:00 period) and corresponding available energy ($Rn-G_0$) during the rice season of (a) 2015 and (b) 2016 (RE, IT, MT, LT, JB, HF, MI and YR represents the re-greening, early tillering, middle tillering, later tillering, jointing and booting, heading to flowering, milk and yellow ripening stage, respectively)

Recent Publications

1. Xiaoyin Liu, Junzeng Xu, Shihong Yang, et al. Vapor Condensation in Rice Fields and Its Contribution to Crop Evapotranspiration in the Subtropical Monsoon Climate of China. *Journal of hydrometeorology*. 2018, 19(6),1043-1057.
2. Xiaoyin Liu, Shihong Yang, junzeng Xu, et al. Effects of soil heat storage and phase shift correction on energy balance closure of paddy fields. *Atmósfera* 2017, 30(1), 39-52.
3. Xiaoyin Liu, Junzeng Xu, Shihong Yang, et al. Surface Energy Partitioning and Evaporative Fraction in a Water-Saving Irrigated Rice Field. *Atmosphere* 2019, 10, 51.
4. Xiaoyin Liu, Junzeng Xu, Shihong Yang. Rice evapotranspiration at the field and canopy scales under water-saving irrigation. *Meteorology and Atmospheric Physics*. 2018, 130(2):227-240.
5. Junzeng Xu, Xiaoyin Liu, Shihong Yang, et al. Modeling rice evapotranspiration under water-saving irrigation by calibrating canopy resistance model parameters in the Penman-Monteith equation. *Agricultural Water Management*. 2017, 182, 55-66.

Biography

Xiaoyin Liu, PhD, lecturer; graduated from Hohai University, majoring in Agricultural Soil and Water Engineering, and Ph.D. in Engineering, December 2017; then working in College of agricultural engineering, Hohai University. She has been engaged in the research on the efficient utilization of agricultural water resources and its ecological environment effects for a long time. There are some innovative research results on water, heat and carbon fluxes in paddy fields under water-saving irrigation practice in terms of scale conversion, scale effect and coupling simulation. To date, She has published more than 20 articles, 8 of which published in the SCI, 3 published in the EI and some core articles. She is responsible for 3 major infrastructural research grants from the National Natural Science Foundation of China, the Fundamental Research Funds for the Central Universities, the Natural Science Foundation of Jiangsu Province. As a major researcher, I have also participated in 4 National Natural Science Foundation of China. Previously, she was awarded the first prize for excellent papers of China Water Resources Efficient Utilization and Water Saving Technology Forum in 2017.

lxysin1819@hhu.edu.cn

Notes:

14th International Conference on

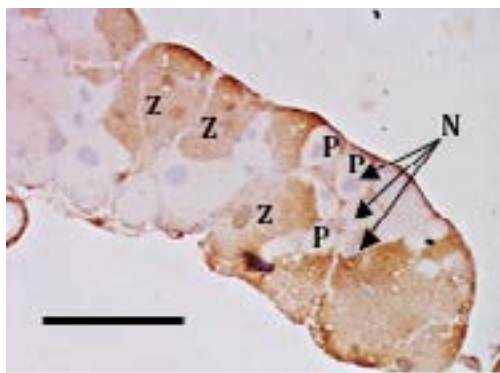
Agriculture & Horticulture

August 15-16, 2019 | Rome, Italy

Regulations of serotonin and dopamine in the salivary glands of the red palm weevil, *Rhynchophorus ferrugineus* (Coleoptera: Dryophthoridae) during feeding and starvation

Nurul Wahida Othman, Norzainih, J.J. and Norefrina Shafinaz, M. N.
Universiti Kebangsaan Malaysia, Malaysia

Statement of the Problem: *Rhynchophorus ferrugineus* or Red Palm Weevil (RPW) is the important pest for Palmaceae plants. However, there is no effective way to control its infestations as it only shows symptom until the late stage of infestation where the plant could not survive anymore. Fundamental studies need to be done to understand its physiology so that it can be applied to control this pest by targeting its biological system. Serotonin (5-HT) and dopamine (DA) has been known as potent biogenic amines that control the physiological events in the insect. Methodology & Theoretical Orientation: This study focuses on its important feeding organs that is salivary gland where the role of 5-HT and DA in the regulations of salivary gland of RPW during feeding and starvation of 24h, 48h and 72h were determined. Samples were collected from infested coconut plantation in Terengganu state Malaysia and were reared in the lab. Immunohistochemical (IHC) analysis was done to determine the distribution of these amines in the salivary glands while enzyme-linked immunosorbent assay (ELISA) was conducted to quantify these amines during different feeding status. Findings: IHC staining had indicated that 5-HT and DA are positively present within cells of the salivary gland where 5-HT is more dominant on zymogenic cells while DA stained mostly on parietal cells. The IHC stained were more intense in salivary tissues for a longer period of starvation (72h) suggesting that these biogenic amines also regulate the glands during the non-feeding period. From the ELISA assays, the level of 5-HT and DA increased significantly during the starvation period (72h) ($p < 0.05$) where the 5-HT level was increased dramatically compared to DA. Conclusion & Significance: Further work is necessary to understand the agonistic and antagonistic role of these amines in controlling the feeding of RPW that can be manipulated in future by targeting its pathway for the development of bio-pesticide.



Recent Publications

1. Nurul Wahida, O., Nur Hudawiyah, A., Roslim, R., Nur Khairunnisa, S., Norela, S, (2018) Mouthpart and digestive tract morphology of the synchronized firefly, *Pteroptyx tener* (Coleoptera: Lampyridae) , Serangga. 23(2): 170-182

2. Maizom Hassan, Norazila Yusoff, Wan Mohd Aizat, Nurul Wahida Othman & Idris Abd Ghani (2018) Optimization method for proteomic analysis of the larva and adult tissues of *Plutella xylostella* (L.) (Lepidoptera: Plutellidae), *Sains Malaysiana*. 47(12): 2975-2983
3. Farah Nadiyah R., Norefrina Shafinaz M.N. and Nurul Wahida O., (2018) Preliminary study on gut bacterial abundance in *Rhynchophorus ferrugineus* (Coleoptera: Dryophthoridae) fed on different diets. *Serangga*. 23(1): 126-138
4. Muhamad Azmi Mohammed, Ameyra Aman-Zuki, Nurul Othman Wahida, Yohsuke Tagami, Salmah Yaakop (2018) The role of a novel *Wolbachia* (Rickettsiales: Anaplasmataceae) synthetic peptide, WolFar, in regulating prostaglandin levels in the hemolymph of *Acheta domesticus* (Orthoptera: Gryllidae). *Turkish Journal of Zoology*. 42(4): 422-431
5. Wan Nurul 'Ain Wan Mohd Nor, Nurul Wahida Othman, Salmah Yaakop, Norefrina Shafinaz Md Nor, (2018) Morphology and histology of reproductive organ and first screening of *Wolbachia* in the ovary of red palm weevil, *Rhynchophorus ferrugineus* (Coleoptera: Dryophthoridae), *Serangga*. 23(2): 183-193

Biography

Nurul Wahida Othman received her PhD from Australian National University, Canberra in 2013. She is currently a Senior Lecturer in Universiti Kebangsaan Malaysia (UKM) and Head of the Centre for Insect Systematics (CIS), UKM. She has more than 30 publications ranging from journal articles, proceedings and chapters in book since she started her academic career in UKM. She also actively presented her work at a few international and local seminars and conferences. Her research interest is on insect physiology that focused on the anatomy, histology and regulations of the digestive, nervous and reproduction system of pest insects and aesthetics insects.

wahida@ukm.edu.my

Notes:

Impact of shallow barrier isolation layer and vertical salinity difference on tomato water and salinity production function**Sheng Chen**

Hohai University, China

Soil salinity is often heterogeneous, but plant response to uneven salt distributions in the vertical direction (USDVD) of the root-zone under buried straw layer is seldom studied in tomato (*Solanum lycopersicum* L.var. Yazhoufenwang). Our objective in this study was to evaluate the effects of USDVD under a buried straw layer on tomato yield and production function. The treatments, T1:1, T1:5, T2:4 and T3:3, were established by setting the upper soil layer with EC1:5. Under Blank model, Singh model, Jensen model and Rao model, the water distribution factors in different growth stages of tomato were introduced to establish the production function of potted tomato. The correlation analysis between the simulated yield and the measured yield of the test group was carried out by using the function. The results showed that when the water consumption of upper and lower layers of tomato was taken as the influencing factor, the Jensen model was used. The correlation coefficient R^2 between simulated and measured yields is 0.9211. The AE, RMSE and Cv are the lowest, which are 0.008, 0.083 and 11.341% respectively. While for salt production function. The correlation coefficient R^2 , AE, RMSE and Cv were calculated on the basis of predicting yield and measured yield. Results showed that when the Jensen model was established by using vertical salinity difference factor, the function had the best predictive effect on tomato yield, with R^2 , AE, RMSE and Cv values of 0.8758, 0.005, 0.082 and 11.250%, respectively. Combined water and salt production function based on Jensen model, The predicted tomato yield is fitted with the measured yield by using the function. The evaluation indexes R^2 and AE, RMSE and Cv are 0.9507, 0.0007, 0.0495 and 6.8%, respectively. The simulation effect is further improved on the basis of the separate water or salt production function.

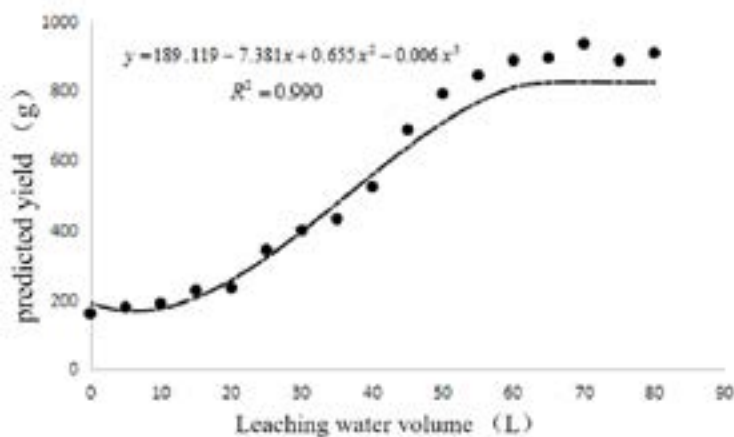


Figure 1. Predicted yield of Tomato under leaching water

Recent Publications

1. Sheng Chen, Zhanyu Zhang, Zhenchang Wang, Xiangping Guo, Minhao Liu, Yousef Alhaj Hamoud, Jiechen Zheng, Rangjian Qiu. Effects of uneven vertical distribution of soil salinity under a buried straw layer on the growth, fruit yield, and fruit quality of tomato[J]. *Scientia Horticulturae*, 2016, 203: 131-142.
2. Sheng Chen, Zhenchang Wang, Zhanyu Zhang, Xiangping Guo, Mengyang Wu, Ghulam Rasool. Effects of Uneven Vertical Distribution of Soil Salinity on Blossom-end Rot of Tomato Fruit[J]. *Hortscience*, 2017, 52(7): 958-964.
3. Sheng Chen, Zhenchang Wang, Xiangping Guo, Ghulam Rasool, Jian Zhang, Yi Xie, Yousef Alhaj Hamoud, Guangcheng Shao. Effects of vertically heterogeneous soil salinity on tomato photosynthesis and related physiological parameters[J]. *Scientia Horticulturae*, 2019, 249: 120-130.
4. Yousef Alhaj Hamoud, Xiangping Guo, Zhenchang Wang, Hiba Shaghaleh, Sheng Chen, Alfadil Hassan, Ahmad Bakour. Effects of irrigation regime and soil clay content and their interaction on the biological yield, nitrogen uptake and nitrogen-use efficiency of rice grown in southern China[J]. *Agricultural Water Management*, 2018, 213: 934-946.
5. Yousef Alhaj Hamoud, Zhenchang Wang, Xiangping Guo, Hiba Shaghaleh, Mohamed Sheteiwy, Sheng Chen, Rangjian Qiu and Mohammed M. A. Elbashier[J]. *Agronomy*, 2019, 9, 100.

Biography

Sheng Chen in 2013 to 2017 had studied for PhD degree in Agricultural and Hydraulic Engineering of Hohai University. Since 2018, postdoctoral has been carried out in the College of Water Conservancy and Hydropower, Hohai University. The response mechanism of vertical non-uniform distribution of salt to soil water and salt transport and crop under isolation zone was studied and 5 SCI papers were published during the last 5 years.

15950467154@163.com

Notes:

Development of rice for unfavorable ecosystems

Noraziyah Abd Aziz Shamsudin

Universiti Kebangsaan Malaysia, Malaysia

Development of rice cultivars which is tolerant to multiple abiotic stresses is essential to improve food security. With the objective of improving grain yield (GY) under low water input (RS), three drought yield QTLs $qDTY_{2.2}$, $qDTY_{3.1}$ and $qDTY_{12.1}$ had successfully pyramided into Malaysian mega-variety rice, MR219 via marker assisted QTLs pyramiding (MAQP) technique. Donor of the QTLs were the near isogenic lines developed by International Rice Research Institute (IRRI). Three selected pyramided lines (PLs) were evaluated for their yield potential under RS and non-stress (NS), and survivability under anaerobic germination, submergence and salinity stresses. Pyramided lines produced higher yield compared to recipient parent, MR219 in all trials. PL-5 became the most promising PL as it gave a yield advantages of 461.15 kg/ha and 1360.00 kg/ha under RS and NS conditions. Under submergence stress, survival rate (SR) of all PLs and submergence tolerant check IR64-Sub1 was significantly different to MR219 (highly susceptible to submergence) in two evaluation cycles (SS1 and SS2). Furthermore, non-significant result was obtained for SR between PL-2 (80.00%) and IR64-Sub1 (86.67%) under anaerobic germination indicate that these PLs especially PL-2 was capable to germinate and growing well under flooded condition. For salinity stress, SR of PL-68 was higher than salinity tolerant check, Nona Bokra under intermediate (8 dS/m) and severe (15 dS/m) salinity levels. Recovery score (RecS) of PL-68 was either same or higher than Nona Bokra for both salinity levels in two evaluation cycles may indicate a high tolerance level of PL-68 under SL condition. This study suggests that MAQP could be an effective strategy to enhance abiotic stresses tolerance in rice. Promising PLs used in this study can be recommended for cultivation in either normal or unfavorable rice ecosystems in Malaysia as it may help in stabilizing rice production and improving food security.

Table 1: Survival rate under anaerobic germination (AG), submergence (SS) and salinity stress (SL) conditions

Genotype	Survival Rate				
	AG	SS1	SS2	SL (8 dS/m)	SL (15 dS/m)
PL-2	80.00a	91.53a	77.78a	-	-
PL-5	46.67c	85.20a	66.67a	35.55b	15.64b
PL-68	66.67b	87.50a	71.80a	88.89a	29.41a
MR219	40.00c	0.00b	6.30b	25.00c	12.50b
IR64-Sub1	86.67a	88.80a	80a	-	-
Nona Bokra	-	-	-	66.67b	7.69b

Recent Publications

1. Gwen Iris Descalsota-Empleo et al. (2019) Genetic dissection of grain nutritional traits and leaf blight resistance in rice. *Genes* 2019,10,30: 1-23.
2. Arvind K, Nitika S, Shalabh D, Shailesh Y, BPM Swamy, & Noraziyah AAS (2018) Marker-assisted selection strategy to pyramid two or more QTLs for quantitative trait-grain yield under drought. *Rice* 11:35.

3. Margaret C, Nitika S, Shalabh D, Noraziyah AAS, Kenneth MN, Amelia H, & Arvind K. (2017) Genetic loci enhancing grain yield and root development under variable cultivation conditions. *Frontiers in Plant Science* 2017(8):1763.
4. Swamy BPM, Noraziyah AAS, Site Noorzuraini AR, Mauleon R, Wickneswari R, Ma. Teresa SC, & Kumar A (2017) Association mapping of yield and yield-related traits under reproductive stage drought stress in rice (*Oryza sativa* L.). *Rice* 2017(10-22).
5. Noraziyah AA., Swamy BPM, Wickneswari R, Ma. Teresa SC, Anitha R, & Kumar A (2016) Marker assisted pyramiding of drought yield QTLs into popular Malaysian rice cultivar, MR219. *BMC Genetics* 2016: 17-30.

Biography

Noraziyah Abd Aziz Shamsudin is a senior lecturer in Plant Breeding and Genetics from Biology Program, Faculty of Science and Technology, Universiti Kebangsaan Malaysia (UKM). She finished her PhD on Genetics from UKM-IRRI (International Rice Research Institute) twin program in 2014 and joined UKM as senior lecturer a year after. Her research interest focus on the genetic improvement of rice and vegetables for biotic and abiotic stresses tolerance. She has published 12 articles related to her research interest in high impact journals. She also a member of Genetic Society of Malaysia. In her free time, she enjoys spending time with family as well as gardening, reading, and baking.

nora_aziz@ukm.edu.my

Notes:



14th International Conference on

Agriculture & Horticulture

August 15-16, 2019 | Rome, Italy

Scientific Tracks & Abstracts Day 2

Agri 2019



SESSIONS

Agricultural Biotechnology | Livestock/Animal Farming | Crop Sciences | Soil & Water Management | Plant Science

Chair: Jianlong Xu | Chinese Academy of Agricultural Sciences | China

Co-Chair: Lorenzo Jesus Labrador | World Meteorological Organization | Switzerland

SESSION INTRODUCTION

Title: The first report on factors affecting tissue culture of *Thymus Transcaspicus Klokov* from Iran

Mehrزد Honarvar | Islamic Azad University | Iran

Title: Yield and quality of brine-ripened cheeses, production from the milk of Jersey and Simmental cows

Zhirayr Chitchyan | Armenian National Agrarian University | Armenia

Title: Response of potato (*Solanum Tuberosum* L.) varieties to planting dates in semi-arid lowland Nigeria

Adamu Muhammad | Kebbi State University of Science and Technology | Nigeria

Title: The potential anticancer effects of traditional medicinal herbs on oral squamous cell carcinoma

Mahboobeh Razmkhah | Shiraz University of Medical Sciences | Iran

Title: Soil salinity: A significant factor affecting soil nitrous oxide emissions

Yawei Li | Hohai University | China

Title: QTL mapping of nitrogen deficiency tolerance by genome-wide association study approach in a nested association mapping (NAM) population of rice

Kai Chen | Agricultural Genomics Institute at Shenzhen Chinese Academy of Agricultural Sciences | China

Title: Radical scavenging activity of flavonoids increased by metal ions

Rui-Min Han | Renmin University of China | China

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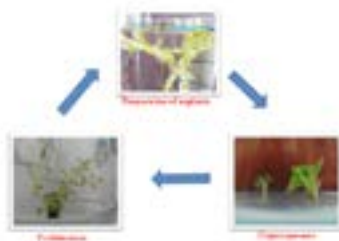
Agriculture & Horticulture

August 15-16, 2019 | Rome, Italy

The first report on factors affecting tissue culture of *Thymus Transcaspicus* Klokov from Iran

Mehrzaad Honarvar and Mahnaz Shahi
Islamic Azad University, Iran.

Khorasani thyme (*Thymus transcaspicus* Klokov) is an important thyme species of Lamiaceae family. This species is an evergreen and aromatic herb with culinary and medicinal use. *Thymus transcaspicus* is distributed in Iran and Turkmenistan. There is no report on in vitro propagation of Khorasani thyme. This study was conducted in *Thymus transcaspicus* for studying the factors affecting tissue culture on this species for the first time. For this purpose, different concentrations of BAP (0, 0.25, 0.5, 1.5, 2 and 3 mg l⁻¹) and IBA (0, 0.5, 1, 1.5 and 2 mg l⁻¹) were added into MS and MS/2 media. The best result for disinfection obtained with the using 70% alcohol for 5 sec. and 20% Clorox for 10 min. The results indicated that MS/2 medium was more effective in terms of explant growth compared with MS medium. The results demonstrated that, application of 1.5 mg l⁻¹ IBA plus 0.5 mg l⁻¹ BAP increased plant height, leaf width, and internode length as well as internode number. Furthermore, application of 1 mg l⁻¹ IBA plus 3 mg l⁻¹ BAP increased leaf length, fresh and dry weight and plant number. According to the results, application of 1.5 mg l⁻¹ IBA improved root number and root length, while application of 1 and 2 mg l⁻¹ increased root diameter in thyme plants.



Recent Publications

1. Ahmadi-Dizaji J, Barnosi A, Jafari M, Rezae-danesh V (2012) The effect of TDZ and BAP on direct regeneration of stem node explants of *Teucrium chamaedrys* L. Special issue of 12th Iranian Genetic Congress; Tehran, Iran.
2. Karami A, Mozafari A, Ebrahimi M and Maarofi H (2011) The effect of different concentrations of benzyladenine on *Satureja avromanica* Maroofi regeneration. The 7th National Biotechnology Congress.
3. Bicca Dode L, Bobrowski VL, Bolacelbraga EJ, Seixas FK, Schuch MW (2003) *In vitro* propagation of *Ocimum basilicum* L. (Lamiaceae). Acta Scientiarum Biological Sciences 25: 435-437.
4. Rout GR (2000) *In vitro* manipulation and prorogation of medicinal plants. Biotechnology Advances 18: 91-120.
5. Saez F, Sanches P, Piqueras A (1994) Micropropagation of *Thymus piperella*. Plant Cell Tiss. Org. Cult. 39: 269-272.

Biography

Mehrzaad Honarvar currently working as Asst. Professor of Hort. Science, Department of Horticultural Science, Branch of Biotechnology and Medicinal Plants, Estahban Branch, Islamic Azad University, Estahban, Iran.

mzhonarvar@gmail.com
mzhonarvar@iauest.ac.ir

14th International Conference on

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Yield and quality of brine-ripened cheeses, production from the milk of Jersey and Simmental cows

Zhirayr Chitchyan

Armenian National Agrarian University, Armenia

Research has been conducted in Lusadzor community of Tavoush province in Armenia to determine the processability of milk samples collected from Jersey and Simmental cows for cheese manufacturing. The chemical composition as well as physical-chemical and technological parameters of the milk samples have been analyzed experimentally. In addition, the researchers estimated physical, chemical and organoleptic parameters as well as the yield of the cheese produced from the bulk milk collected from Jersey and Simmental cows. The results of the research proved that the milk samples collected from Jersey and Simmental cows possess the necessary physical-chemical and technological properties and can be used as high-quality raw material for manufacturing brine-ripened (pickled) cheese. The highest content of dry matter, observed in the milk collected from Jersey cows, stemmed from the high contents of fat, protein and minerals. The content of lactose (milk sugar) and physical characteristics (density, freezing temperature) did not vary significantly across the samples. The rennet clots formed in the milk collected from Jersey cows were characterized by higher structural-mechanical parameters and syneresis. Jersey milk possesses the qualitative characteristics that best contribute to high cheese yield, which allows for the most efficient cheese production. Cheese manufactured from Jersey milk is distinguished by less water content, higher fat and protein contents and higher organoleptic indicators, which all together improve the quality of cheese turning it into a highly competitive product.

Table 2 – Cheese-making technology parameters.

Characteristics	Breed of the cows	
	Simmental	Jersey
Bulk milk quantity, kg	12.0	12.0
Fat, %	3.6	4.9
Protein, %	3.2	3.8
Casein, %	2.5	3.0
Milk clotting time, minutes	28	23
Post-pressing weight of the cheese, kg	1490	2165
Post-pressing cheese yield, %	12.42	18.04
Post-ripening weight of the cheese, kg	1427	2086
Post-ripening cheese yield, %	12.27	17.38
Milk consumption per 1 kg of cheese, kg	8.15	5.75
Water content in ripened cheese, %	48.3	47.8
Weight ratio of fat in cheese dry matter, %	47.2	47.0

Recent Publications

1. Zh. Chitchyan. Analysis of milk productivity of femael ancestors of imported Jersey heifers. Bulletin of National Agrarian University of Armenia, Yerevan N1,2015.p.49-52
2. Zh. Chitchyan, A. Grigoryan. Influnecce of hipokinesia on carbohydrate metabolism in two-month-old pigs. Agrosince /scientific journal/ 7-8 (683-684), Yerevan, 2015, p. 298-301
3. Zh. Chithcyan. L. Minasyan, A. Simonyan, A. Khechoyan. Age-related changes of milk productivity in Simmental breed cows imported from Austria in conditions of LLC „Agroholding Armenia,,. Bulletin of National Agrarian University of Armenia, Yerevan N 4, 2016. p.33-37
4. Zh. Chithcyan. L. Minasyan, A. Simonyan. Exterior features of cows of different ages simmental cattle under conditions of the farms LLC „Agroholding Armenia,, and fund development „Himnatavush,,. Agrosince / scientific journal/ 1-2, Yerevan, 2017, p. 22- 25
5. Zh. Chitchyan. Characteristics of the the reproductive indicators of the cows of Jersey breed in the conditions of North-Eastern zone of Armenia. /ANAU International Conference, Yerevan 2017, p.371-374/
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Biography

Zhirayr Chitchyan is a Lecturer of the Chair of Animal Husbandry and a Research Scientist in Armenian National Agrarian University (2016-present). He received a Doctor of Philosophy in Agricultural Sciences in Animal Husbandry, Armenian National Agrarian University (2014-2017). He completed Bachelor's Degree in Agricultural Economics, Armenian National Agrarian University (2008-2012) and Master's Degree in The Insurance job in Agri food system, Armenian National Agrarian University (2012-2014). He is Research worker in The Appear project Building Organic Agriculture in Armenia BOAA, responsible for organic animal production in ICARE Armenia (2018-present). He is a Coordinator of training courses within the frames of the program of State Assistance to construction of "smart farms" in the Republic of Armenia (2019-2021). He was the Research Scientist of the project << The research of biological and economic characteristics of imported cattle breeds to the Republic of Armenia>> in Scientific Center of Risk Assessment and Analysis in Food Safety Area SNCO (2016-2018).

zh_chitch@yahoo.com

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Agriculture & Horticulture

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Response of potato (*Solanum Tuberosum* L.) Varieties to planting dates in Semi-arid lowland Nigeria

Adamu Muhammad¹, I.U. Mohammed¹, H. Yusuf², N. M. Kwaifa¹, M. S. NaAllah¹ and M. U. Tanimu¹¹Kebbi State University of Science and Technology, Nigeria.²Waziri Umaru Federal Polytechnic, Nigeria.

Potato is a temperate crop requiring low temperatures for growth and yield. Production of potato in the semi-arid lowland Nigeria is restricted to periods of low temperatures that prevailed from early November to late February. The general approach for potato in this region is to relate the planting date to coincide with the period of relatively low temperatures, as high temperature inhibits growth and yield. Based on the above, field experiments were conducted in two locations at the Teaching and Research Farm of the Kebbi State University of Science and Technology, Aliero, during 2016/2017 dry season. The aim was to determine the most appropriate planting date and most suitable variety in the study area. Treatments consisted of factorial combinations of four Planting dates (1st November, 15th November, 1st December and 15th December 2016) and four potato varieties (Bertita, Diamant, Lady-christl and Nicola). The experiments were laid out in a Randomized Complete Block Design with three replications. Results revealed that stand count, plant height, number of leaves per plant, shoot dry weight, number of tubers per plant, weight of tubers per plant, mean tuber weight, mean tuber diameter and fresh tuber yield were higher when planted on 1st - 15th November. Bertita proved to be the most robust in terms of growth; and with Nicola, in terms of yield compared to the other varieties. Based on the results of this study, it could be concluded that, planting of potato from 1st November to 15th November coupled with either Bertita or Nicola give the highest potato yield in the study area.

Biography

Adamu Muhammad was born 46 years ago (03-09-1973) in Birnin Kebbi, Kebbi State, Nigeria. He obtained his B. Agriculture and M. Sc. Crop Science in Usmanu Danfodiyo University, Sokoto, Nigeria. He completed his PhD in Agronomy at the Ahmadu Bello University, Zaria, Nigeria. He is currently the Head of Department of Crop Science, Deputy Dean of the Postgraduate School and was one time the Director of Examinations and Registration of the Kebbi state University of Science and Technology, Aliero, Nigeria. He has published more than 40 papers in reputed journals nationally and internationally.

adamubk73@gmail.com

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The potential anticancer effects of traditional medicinal herbs on oral squamous cell carcinoma

Mahboobeh Razmkhah, Ali Dehghani Nazhvani, Najmeh Sarafraz and Fatemeh Askari
Shiraz University of Medical Sciences, Iran

Introduction: Traditional herbs and spices are widely consumed in the world and contains numerous bioactive components that are beneficial to consumer health. Documents have endorsed that a diet enriched with fruit, vegetables and spices can reduce the risk of developing major cancers. Purpose: This study aimed to evaluate the growth inhibitory activities of four medicinal herbs including saffron, ginger, cinnamon and curcumin on oral squamous cell carcinoma (OSCC) cell line (KB).

Materials and Method: Having obtained the aqueous extracts of the four herbs, they were administered on KB per se and in dual, triple, and quadruple combinations. Their cytotoxic effects were measured in different concentrations after 24 and 48 hours using MTT assay.

Results: The minimum and maximum concentrations of extracts were respectively 108 and 217 mg/ml for curcumin with IC₃₀ of 77 mg/ml, 108 and 270 mg/ml for ginger with IC₃₀ of 58 mg/ml, 2 and 10 mg/ml for saffron with IC₃₀ of 1.9 mg/ml, and 5 and 40 mg/ml (100% cytotoxicity) for cinnamon with IC₃₀ of 3.3 mg/ml. The best cytotoxicity of the combination of extracts was seen in cinnamon-saffron after both 24 and 48 hours and the four herbs combination after 48 hours. Conclusion: The consumption of spices specially saffron and cinnamon may contribute to the prevention of certain types of cancer including OSCC.

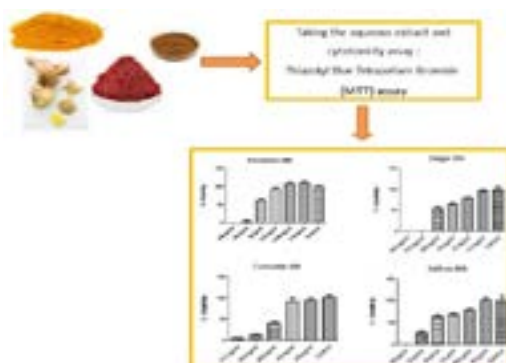


Figure 1. Cytotoxic concentration (mg/ml) of curcumin, saffron, ginger, and cinnamon on OSCC cell line (KB) after 48 hrs.

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Biography

Mahboobeh Razmkhah, Associate Professor of Immunology and one of the faculty members of Shiraz Institute for Cancer Research, Shiraz University of Medical Sciences. My main research field is cancer including genetics, stem cell and molecular mechanisms of cancer development which lead to the publication of 50 papers, and 40 research work presented at conferences, and two awards as follows: Excellent Poster Award by Asian Cellular Therapy Organization (ACTO), Japan, Oct 28, 2017 and Cha Award for best abstract, 7th ACTO Annual Meeting in Beijing, China, November 12, 2016.

razmkhahm@sums.ac.ir
mrazmkhah2@gmail.com

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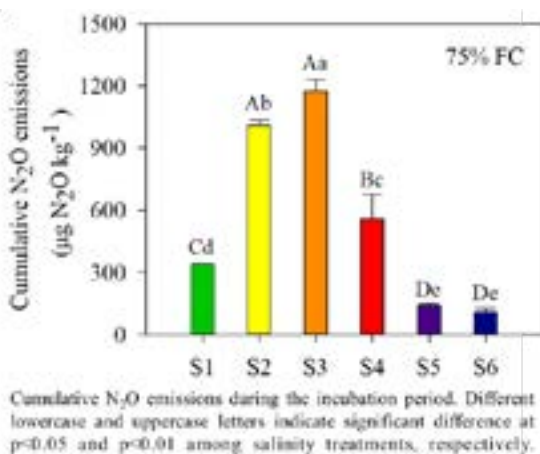
Agriculture & Horticulture

August 15-16, 2019 | Rome, Italy

Soil salinity: a significant factor affecting soil nitrous oxide emissions

Yawei Li
Hohai University, China

Nitrous oxide (N_2O) as a by-product of various soil nitrogen (N) transformation pathways, its production may be affected by soil salinity which has been proved to have significant negative effect on microbial-driven soil N cycling processes. However, it is little known that the response of N_2O production to different soil salinities from non-saline to heavily saline. We conducted a laboratory incubation experiment using the soils with six different salinity levels from 0.25 to 6.17 dS m^{-1} . With powdered organic fertilizer, rich of ammonium (NH_4^+-N), as N source, the soils were incubated at three soil moisture levels (50%, 75% and 100% of field capacity) for six weeks. N_2O fluxes and inorganic N (NH_4^+ , NO_2^- and NO_3^-) concentrations were measured throughout the incubation period. Results showed that N_2O fluxes increased first then decreased with the increase of soil salinity at all three soil moisture levels, and N_2O emissions were significantly promoted in soils with EC of 1.01 and 2.02 dS m^{-1} . The rates of NH_4^+ consumption and NO_3^- production decreased with increasing soil salinity, while the accumulation of NO_2^- increased first then decreased. It suggests that soil salinity inhibits both the two steps of nitrification, but the inhibition of salinity on nitrite oxidation was stronger than that on ammonia oxidation. Enhanced N_2O emissions by soil salinity may be mainly derived from nitrifier denitrification promoted by cumulative NO_2^- .



Recent Publications

1. Y.W., Li., Q., Wei., J.Z., Xu., Y.H., Wang., H.Y., Wang., F., Hameed. (2018). Soil water-air replacement during water infiltration process and its non-neglectable contribution to water-induced CO_2 pulse emission. *Pakistan journal of agricultural sciences*. 56(1):275-281
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Biography

Yawei Li, Male, has been studying as a PhD student of Agricultural Water and Soil Engineering since 2016 at Hohai university. His research focuses on saline soil nitrogen cycle and greenhouse gases emissions and 5 papers have been published during the last 3 years.

yaweizx@hhu.edu.cn

Notes:

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QTL mapping of nitrogen deficiency tolerance by genome-wide association study approach in a nested association mapping (NAM) population of rice

Kai Chen, Jianlong Xu and Zhikang Li

Chinese Academy of Agricultural Sciences, China

To develop green super rice varieties with high yield and improved nitrogen deficiency tolerance (NDT), a nested association mapping population was developed through a modified backcross breeding approach using a high yielding and widely adaptable Xian variety, Huanghuazhan (HHZ) as the recipient and 8 donor parents IR50, IR64, Teqing, PSBRC28, PSBRC66, CDR22, OM1723 and Phalguna. A total of 496 lines, plus the HHZ, were used for evaluation of heading date, plant height, grain yield, biomass yield, thousand grain weight under the low nitrogen (LN) and the normal nitrogen (NN) conditions in 2013 early season, 2013 last season and 2014 early season. Total of 48 QTLs were identified by R-package MAGICqtl based on 7388 bins derived from 400K high-quality SNPs under the LN, NN and LN/NN conditions. Among them, ten main-effect QTLs were simultaneously identified in the LN and NN conditions. Four genomic regions, including bin16 on chromosome 1, bin 2186 on chromosome 3, bin 3699 on chromosome 6, and bin 4859 on chromosome 8 were simultaneously identified for NDT-related traits. The *qTGW2-1* for thousand grain weight, which was simultaneously detected across three seasons under the LN condition, was delimited into a region of 50Kb by genotypic overlapping of recombinant lines inside the marker bin1459. The donor alleles at *qTGW2-1* contribute to NDT. Molecular designed pyramiding of favorable alleles at the consistently detected NDT-QTLs is under way to develop new breeding lines with high yield and NDT based on performance of NDT and QTL information of NAM lines in the elite background.

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3. Hu B, Wang W, Ou SJ, et al (2015) Variation in NRT1.1B contributes to nitrate-use divergence between rice subspecies. *Nature Genetics*, 47(7): 834-838
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Biography

Kai Chen got PhD degree on Crop Sciences in 2012 in Shenyang Agricultural University, China. After finishing postdoctoral career of molecular rice breeding for four years at CAAS, he joined the Agricultural Genomics Institute at Shenzhen, Chinese Academy of Agricultural Sciences, focusing on molecular breeding for hybrid rice and inbred rice for high yield, high grain quality, abiotic and biotic stress tolerances. So far, he has published 5 papers in international journals.

kaiserchenkai@163.com

Radical scavenging activity of flavonoids increased by metal ions

Rui-Min Han, Yi Xu, Ling-Ling Qian and Jian-Ping Zhang,
Renmin University of China, China

Flavonoids are secondary plant metabolites of the polyphenol family with a diversity of biological functions. Most metal-flavonoid complexes are found to have considerably higher antioxidant effects than free flavonoids. Molecular mechanisms of antioxidant activity of flavonoids increased by metal ions are poorly understood.

In our studies, binding of flavonoids (apigenin, kaempferol and luteolin) with metal ions, and radical scavenging activities of corresponding complexes were investigated in detail. Structural factors, such as coordinate proportions of metal ions and flavonoids and steric orientations affecting activities of metal-flavonoid complexes as antioxidants, are elucidated.

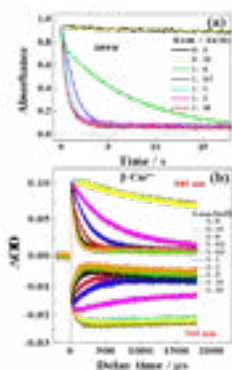


Figure 1. Absorbances for (a) DPPH• at 516 nm, and (b) β-Car•+ at 940 nm scavenged and β-carotene ground state bleaching at 510 nm recovered by indicated ratio of kaempferol (Kaem) and Zn(II). The concentration of Kaem is 100 μM.

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Biography

Rui-Min Han, Associate professor in Department of Chemistry, Renmin University of China, Beijing, 100872 Research interest: Antioxidant mechanism and application of phytochemicals and their metal complexes. Speciality: time-resolved dynamics (stopped-flow, laser photolysis).

rmhan@ruc.edu.cn