

MOHAMED A. SHAHBA, Ph. D.

Shahbam@lamar.colostate.edu

<http://hla.colostate.edu/postdocs/shahba.htm>

EDUCATION

- Ph.D., Plant ecophysiology, Dept. of Horticultural and Landscape Architecture, Colorado State University **2002**
- M.S., Rangeland Ecology, Department of Natural Resources, Institute of African Research and Studies, Cairo University **1994**
- Natural Resources Diploma, Department of Natural Resources, Institute of African Research and Studies, Cairo University **1991**
- B.S., Biology (Botany), College of Science, Tanta University **1987**

ADDITIONAL COURSES AND TRAINING

- Successfully Completed the Summer Course on Learning, Teaching and critical thinking, (TILT), Colorado State University. Is culture important in stem - Culture and inclusion: strategies for engaging culture dialogue in the classroom - Critical thinking in content writing - Write-to-learn strategies for the large classroom - An overview of best practices of online course development. **2013**
- Successfully Integrating Non-Native English Speakers into CSU Classes, (TILT), Colorado State University **2013**
- Successfully Completed the Summer Course on Learning, Teaching and critical thinking, (TILT), Colorado State University. Using problem-based, integrative learning to support student engagement and critical thinking. **2012**
- Understanding Student Cheating and Promoting Academic Integrity in Classes, (TILT), Colorado State University **2012**
- Working with Post 9/11 Student Veterans, The Institute for Learning and Teaching (TILT), Colorado State University **2012**
- Turfgrass Management, Colorado State University **2007**
- Turfgrass Science, Colorado State University **2006**
- Nuclear gauges training course, Colorado State University **2005**
- Design and Data Analysis for Researchers II. Colorado State University **2003**

PROFFESIONAL EXPERIENCE

- *Special Assistant Professor*, Colorado State University, Horticulture and Landscape Architecture Department, **2010-present**

Primary responsibilities are:
 - Development and delivery of graduate and undergraduate courses
 - Advise students and conduct research
- *Visiting Scholar/Scientist*, Colorado State University, Horticulture and Landscape Architecture Department,

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2009-2010

- ***Associate Professor,***

Cairo University, Institute of African Research and Studies, Natural Resources
Department, Egypt

2008-present

- ***Postdoctoral Research Associate,***

Colorado State University, Horticulture and Landscape Architecture Department,

2005-2009

- Conducted research related to ecophysiology of turfgrasses
- Evaluated salinity impacts when reclaimed water is used for irrigation in urban landscapes
- Improved turfgrasses seed germination under saline conditions
- Conducted research related to turfgrass stress physiology and drought tolerance
- Conducted research to address the physiological characteristics of woody plants that ameliorate the effects of drought and thermal stress
- Coordinated and managed research assistants and temporarily student labor
- Helped in class teaching and graduate students mentoring
- Helped in writing research reports, manuscripts and grant proposals

- ***Assistant Professor,***

Cairo University, Institute of African Research and Studies, Natural Resources
Department, Egypt

2003-2008

- Developed and delivered lectures for 3 graduate courses
- Co- advised 14 graduate students (6 Ph. D., and 8 M.Sc.)
- Conducted research related to plant ecophysiology
- Helped in curriculum development, class scheduling, worked with industry and community groups, served on departmental board and Institute-wide committees, and assessed student academic achievement
- Coordinated and managed research assistants, laboratory technicians and temporarily student labor
- Wrote research reports, manuscripts and grant proposals

- ***Postdoctoral Research Associate,***

Colorado State University, Horticulture and Landscape Architecture Department

2002-2003

- Evaluate salinity impacts when reclaimed water is used for irrigation in urban landscapes
- Conduct research related to turfgrass stress physiology
- Conduct research to assess the environmental factors affecting potato storage

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- Conduct research to assess the diversity of phenolic antioxidant content and radical scavenging capacity in USDA apple germplasm core collection
- Write research reports, manuscripts and grant proposals

- ***Assistant Lecturer,***
Cairo University, Institute of African Research and Studies, Natural Resources Department, Egypt **1994-1997**
 - Assisted in class teaching for 4 graduate courses
 - Conduct research related to plant ecophysiology
 - Helping in departmental and Institute-wide committees, and assessing student academic achievement

- ***Teaching Assistant,***
Cairo University, Institute of African Research and Studies, Natural Resources Department, Egypt **1989-1994**
 - Helped in class teaching
 - Helped in laboratory and field work
 - Conducted research related to plant ecophysiology

TEACHING AND STUDENT ADVISING EXPERIENCES

- ***Assistant Professor,*** 2010- present
 - Colorado State University, Horticulture and Landscape Architecture Department. Teach HORT 480/580, a dual level, Plant Growth Regulators in Agriculture and Horticulture (3 credits) / Advanced Plant Growth Regulators in Agriculture and Horticulture (4 credits) every Fall
 - Co-advise four graduate students (two Ph.D. candidates and two master candidate). Member on two graduate students graduate committees (one Ph.D. candidate and one master candidate).

- ***Postdoctoral Research Associate,*** **2002-2009**
 - Colorado State University, Horticulture and Landscape Architecture Department. Assisted in class teaching/Assistant instructor for Hort 576 course (Advanced environmental plant stress physiology)

- ***Assistant Professor,*** **2003-2005**
 - Cairo University, Institute of African Research and Studies, Natural Resources Department. Developed and delivered lectures for 3 graduate courses. These are: 1) The ecology of tropical crops; 2) The vegetation cover ecosystems in the tropics (forests, shrublands, and grasslands); and 3) The ecology of aquatic plants.

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- I co- advised 14 graduate students (6 Ph. D., and 8 M.Sc.)

- *Assistant Lecturer*, **1994-1997**
 - Cairo University, Institute of African Research and Studies, Natural Resources Department. Assisted in class teaching and grading

- *Teaching Assistant*, **1989-1994**
 - Cairo University, Institute of African Research and Studies, Natural Resources Department. Assisted in class teaching and grading

RESEARCH EXPERIENCE

More than 20 years of research experience. The principal focus of my research is the environmental stresses of plants. My research interests focus on developing more stress tolerant plants for regional use, less potable water use in turfgrass by using recycled wastewater and brackish water in urban landscape irrigation, improving seed germination and establishment under saline conditions and studying the possible environmental changes that may affect the whole ecosystem components as a result of using recycled wastewater in irrigation. My research interests include basic ecological processes in urban landscapes with a focus on the biology, physiology and ecology of these systems.

Participated in the following projects:

- Salinity impacts of reclaimed wastewater usage in urban landscapes irrigation.
- Evaluation of saltgrass as a new salinity and drought tolerant turfgrass.
- Environmental stress factors of turfgrasses.
- Establishment of seeded inland saltgrass.
- Carbon sequestration in urban landscape.
- Environmental factors affecting potato storage.
- Diversity of phenolic antioxidant content and radical scavenging capacity in USDA apple germplasm core collection.
- Physiological characteristics of woody plants that ameliorate the effects of drought and thermal stress.

GRANTS

- Co-principapl investigator of Fulbright MENA Regional Short-Term Visiting Fulbright Scholar Program in Science and Technology (\$50,000).
- 2012. PI of a US-Egypt joint research project “Germplasm conservation, genetic characterization, ecophysiological and phytochemical studies of Black Calla Lily endemic in Mediterranean coast” (\$195,690). Granted (US-AID).

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ABILITIES AND TECHNICAL EXPERIENCE

- Strong Experience in Carbohydrate analysis using gas chromatography (GC) column. HP 5890 series II gas chromatograph (Hewlett Packard, Boulder, CO.)
- Strong experience in vegetation analysis (density, frequency, cover and biomass)
- Extensive experience in mineral analysis using Shimadzu Atomic absorption/Flame emission Spectrophotometer (AA-640-12) and Inductively-Coupled Plasma atomic emission spectrophotometer (ICP-AES) (Model 975 plasma Atomcomp, thermo Jarrel Ash Corp., Franklin, MA 02038)
- Experience in Nitrogen analysis using the Spectrophotometer and the combustion furnace (Model CHN-1000 elemental analyzer, LECO Corporation, St Joseph, Michigan)
- Excellent knowledge of soil analysis methods
- Experience dealing with statistical data analysis (PROC PROBIT, ANOVA, PROC CORR, PROC REG, GLM and MEAN SEPARATION tests) using SAS
- Experience with spread sheet (EXCEL and QUATROPRO)
- Excellent experience with Sigma Plot Graphics
- Background in building and using simulation models
- Background in Quantitative Spatial Analysis using S⁺
- Good experience in surfactant analysis techniques
- Good experience in antioxidants analysis techniques
- Certified user for nuclear gauges by Colorado State Univ. Radiation Control Office

PUBLICATIONS

- **2014. Shahba, M. A.,** and M.S. Abbas. Drought Resistance Strategies of Seashore Paspalum Cultivars at Different Mowing Heights. *HortScience*, 49(2):221–229.
- **2014. Sama, A.E., M. A. Shahba,** H.G. Hughes and M.S. Abbas. Comparative growth analysis and acclimatization of tissue culture derived cocoyam [*Xanthosoma sagittifolium* (L) Schott] plantlets. *American Journal of Experimental Agriculture*, Science domain *international*.
- **2013. Shahba, M. A.,** and M.S. Abbas, M.H. El-Morsy and F.I. Moursy. Ecological and chemical studies on Wadi El-Ramla range plants in the North Western coast of Egypt. *J. Biol. Chem. Environ. Sci.*, 8(3):105-123.
- **2013. Shahba, M. A. and** S.F. Alshammery. Rooting of hard wood cuttings of Shubra white shrub using growth regulator long duration application. *Journal of Food, Agriculture & Environment- JFAE* vol 11 (3&4), October 2013.
- **2013. Alshammery, S.F. and M.A. Shahba.** Rooting of firebush shrub hardwood cuttings using growth regulator long duration application. *Journal of Food, Agriculture & Environment- JFAE* vol 11 (3&4), October 2013.
- **2013. Alshammery, S.F., M.A. Shahba and** M.S. Abbas. Rooting of white shrub and firebush shrub hardwood cuttings using growth regulators quick dip treatments. *Journal of Food, Agriculture & Environment- JFAE* vol 11 (3&4), October 2013.

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- **2012. Shahba, M. A.,** S.F. Alshammary, and M.S. Abbas. Effects of Mowing Height on Salinity Tolerance in Seashore Paspalum Cultivars. *Crop Sci.*, 52: 1358-1370
- **2012. Sama, A.E.,** H.G. Hughes, M.S. Abbas, and **M. A. Shahba.** An Efficient In Vitro Propagation Protocol of Cocoyam [*Xanthosoma sagittifolium* (L) Schott]. The ScientificWorld Journal, Volume 2012, doi:10.1100/2012/346595
- **2011. Qian, Y. L., M. A. Shahba** and S. Wilhelm. Effect of seed treatments, seeding date, and seeding rate on saltgrass seed germination and establishment. USGA Turfgrass and Environmental Research Online 10(1): 1-7 <http://usgatero.msu.edu/v10/n01.pdf>
- **2010. Al-Turki, S., M. A. Shahba,** and C. Stushnoff. Total phenolics and antioxidant properties of date palm (*Phoenix dactylifera* L.) pits as affected by cultivar and location. *Acta Hort.* 882: 1163-1180.
- **2010. Shahba, M. A.** Interaction Effects of Salinity and Mowing on Performance and Physiology of Bermudagrass Cultivars. *Crop Sci.*, 50 (6):2620-2631
- **2010. Shahba, M. A.** Comparative responses of bermudagrass and seashore paspalum cultivars commonly used in Egypt to combat salinity stress. *Hort. Environ. Biotechnol.* 51(5):383-390
- **2010. Shahba, M. A.** On the ecophysiology and seed germination of *Zygophyllum album* (L.) native of western Mediterranean coastal habitats in Egypt. *Australian Journal of Basic and Applied Sciences*, 4(8): 3643-3657
- **2010. Al-Turki, S., M. A. Shahba,** and C. Stushnoff. Diversity of antioxidant properties and phenolic content of date palm (*Phoenix dactylifera* L.) fruits as affected by cultivar and location. *Journal of Food, Agriculture & Environment* Vol. 8(1): 253-260
- **2009. Bauerele, W. L., J. D. Bowden, G. G. Wang and M. A. Shahba.** Exploring the importance of within-canopy spatial temperature variation on transpiration predictions. *Experimental Botany*, Vol. 60 No. 13, 3665-3676
- **2009. Shahba, M. A.** and Y. L. Qian. Influence of Proxy on saltgrass seed germination in saline soils. *International Turfgrass Society Research Journal*, volume 11, 849-858
- **2009. Shahba, M. A.** and W. L. Bauerele. Growth temperature modulates the spatial variability of leaf morphology and chemical elements within crowns of climatically divergent *Acer rubrum* genotypes. *Tree Physiology*, 29, 869-877
- **2008. Al-Turki, S., M. A. Shahba,** P. Forsline and C. Stushnoff. Biodiversity of total phenolics, antioxidant capacity, and juice quality in apple cider taxa. *J. Hort. Environ. Biotechnol.* 49(6):409-417
- **2008. Shahba, M. A.** and Y. L. Qian. Effect of seeding date, seeding rate, and seed treatments on saltgrass seed germination and establishment. *Crop Sci.*, 48 (6):2453-2458
- **2008. Shahba, M. A.,** Y. L. Qian and K. D, Lair. Improving seed germination of saltgrass under saline conditions. *Crop Sci.*, 48 (2):756-762
- **2008. Shahba, M. A.,** S. J. Wilhelm and Y. L. Qian. Cold hardiness of southern and northern saltgrass ecotypes. *Acta Hort.* (ISHS) 783:175-181

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- **2008.** Abbas, M. S., M. H. El-Morsy, **M. A. Shahba** and F. I. Moursy. Ecological studies in coastal sand dune rangelands in the north-west of Egypt. *Options Mediterraneennes*, Series A, No. 79: 389-393
- **2007. Shahba, M. A.** and Y. L. Qian. Effect of nitrogen level on establishing and established saltgrass. *Journal of Environmental Sciences*, El-Mansura University, Egypt, 35: 259-276
- **2007. Shahba, M. A.,** C. Stushnoff, A. McSay, D. Holm and R. Davidson. Effect of temperature on Storage properties, dormancy, soluble sugar content, and alpha-galactosidase activity of seven new potato (*Solanum tuberosum* L) cultivars. *Journal of Food, Agriculture & Environment*. 5(1):84-89
- **2006.** Qian, Y. L., **M. A. Shahba**, S. Wilhelm, D. Christensen, H. G. Hughes and T. Koski. Cold hardiness of inland saltgrass. USGA Turfgrass and Environmental Research Online 5(1): 1-9 <http://usgatero.msu.edu/v05/n01.pdf>
- **2004.** Qian, Y. L., R. F. Follett, S. Wilhelm, A. J. Koski, and **M. A. Shahba**. Carbon isotope discrimination of three Kentucky bluegrass cultivars with contrasting salinity tolerance. *Agron. J.*, 96:571-575
- **2003. Shahba, M. A.,** Y. L. Qian, H. G. Hughes, D. Christensen and A. J. Koski. Cold hardiness of saltgrass accessions. *Crop Sci.*, 43:2142-2147
- **2003. Shahba, M. A.,** Y. L. Qian, H. G. Hughes, A. J. Koski and D. Christensen. Relationships of soluble carbohydrates and freeze tolerance in saltgrass. *Crop Sci.*, 43:2148-2153
- **2003.** McSay, A. E., C. Stushnoff, D. Holm, R. Davidson and **M. A. Shahba**. Storage characteristics of new potato introductions. *Acta Horticulturae*, 619:463-469

IN PRESS MANUSCRIPTS

- **2013. Shahba, M.A.** Improving seed germination of the halophytic grass *Aeluropus lagopoides* under saline conditions. *Journal of African Studies*.
- **2013. Shahba, M.A.** Alleviation of salinity-induced seed dormancy in *Atriplex halimus* L. Grown in two different habitats along the western Mediterranean coast of Egypt. *Journal of African Studies*.

IN PREPARATION

- **Shahba, M.A.** and W.L. Bauerele. Modeling intra-crown wind speed and temperature interactions: Assessment of vertical patterns of water vapor exchange in widely-spaced trees.
- **Shahba, M.A.,** Y.L. Qian, A.J. Koski and H.G. Hughes. Drought resistance, rooting characteristics, soil moisture extraction patterns and water use rate of saltgrass.
- **Shahba, M.A.** and H.G. Hughes. Adaptation of the rapidly micropropagated cocoyam (*Xanthoma Sagittifolium*) SCHOTT.

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CONFERENCE PROCEEDINGS AND POSTERS

- **2010.** Al-Turki, S., **M.A. Shahba**, and C. Stushnoff. Diversity of antioxidant properties and phenolic content of date palm (*Phoenix dactylifera* L.) pits as affected by cultivar and location. Fourth International Date Palm Conference, Abu Dhabi, 15-17 March
- **2009.** M.S. Abbas, M.A. Shahba, M.H. El-Morsy and F.I. Moursy. Ecological and nutritional analyses of rangeland plants in the western Mediterranean coastal sand dunes in Egypt, The 2nd International Conference on Natural Resources in Africa: Sustainable Development in the Nile Basin Countries”, Cairo, Egypt, 11-12 May 2009
- **2009.** M.S. Abbas, M.A. Shahba, M.H. El-Morsy and F.I. Moursy. Ecological and nutritive value studies of salt marshes rangeland plants in the north west coast of Egypt, The 2nd International Conference on Natural Resources in Africa: Sustainable Development in the Nile Basin Countries”, Cairo, Egypt, 11-12 May 2009
- **2007.** **Shahba, M.A.** and Y.L. Qian. Effect of seeding date, seeding rate, and seed treatments on saltgrass seed germination and establishment. ASA-CSSA-SSSA, 2007 International annual meetings- New Orleans, LA, November 4-8
- **2006.** **Shahba, M.A.**, Y.L. Qian, S. Wilhelm and A.J. Koski. Cold hardiness of southern and northern saltgrass ecotypes. ASA-CSSA-SSSA, 2006 International annual meetings- Indianapolis, November 12-16
- **2004.** **Shahba, M.A.** and Y.L. Qian. Effect of salinity on growth and osmoregulators accumulation in four Kentucky bluegrass (*Poa pratensis* L.) cultivars. 3rd International conference on Biological Sciences, Faculty of Science, Tanta University, Egypt, 28-29 April, 2004
- **2004.** **Shahba, M.A.**, Y.L. Qian and H.G. Hughes. Effect of nitrogen level on establishment, production and nutrient content of saltgrass. Int. Conf. Desert Biome Manage. Dev. Imp. Inst. of Afr. Res. & Studies, Cairo Univ., 20-21 Dec., 2004: 112-136
- **2001.** **Shahba, M.A.**, Y.L. Qian, H.G. Hughes and D. Christensen. Cold Hardiness and soluble carbohydrates in saltgrass [*Distichlis spicata* (L.) Green]. 98th ASHS annual conference, Sacramento, CA, July, 2001

MEMBERSHIP, SOCIAL AND INTERNATIONAL ACTIVITIES

- Member of Crop Science Society of America **2001-present**
- Colorado State University International Presidential Fellow **2007-2008**
- Global Water Colloquium. Global water: from conflict to sustainability challenges and opportunities in an interdependent world, Colorado **2008**
- Rapporteur of the International Conference on Desert Biome Management, Development and Improvement, Cairo University, Giza, Egypt **2004**
- President of Egyptian Student Association at Colorado State University **1998-2002**