BALASAHEB V. SONAWANE, Ph. D.

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EDUCATION

2013-2016 **Ph. D. Biological Sciences**, Hawkesbury Institute for the Environment, Western Sydney University, NSW, Australia
Thesis title: Environmental regulation of CO_2 concentrating mechanisms in C_4 grasses with different biochemical subtypes
Advisor: Oula Ghannoum, Spencer Whitney and Robert Sharwood

2007-2009 **M. Sc. Agricultural Biotechnology,** Marathwada Agricultural University, Parbhani, MS, India
Advisor: Fakira Patil

2003-2007 **B. Sc. Agricultural Biotechnology**, Mahatma Phule Agricultural University, Rahuri, MS, India

PROFESSIONAL TRAINING

2016–present **Postdoctoral Research Associate**, School Biological Sciences, Washington State University, Pullman, WA, USA
Advisor: Asaph B Cousins

2014 Training on stable isotopes in biosphere systems at Canberra, Research School of Biology, Australian National University, Feb 2-9th.

2012-2013 **Senior Research Fellow,** Central Institute of Cotton Research, MS, India
Advisor: Ashok B Dongre

2010-2011 **Junior Research Fellow,** Vasantdada Sugar Institute, Pune, MS, India
Advisor: Rachayya M Devarumath

2009-2010 **Research Associate**, Marathwada Agricultural University, MS, India
Advisor: Shivaji P Mehtre

2008-2009 **Research Trainee**, Functional Biology Division, Bhabha Atomic Research Centre, Mumbai (M.S.), India.
Advisor: Vikash Kumar

2008 **Summer Research Fellow**, University of Calcutta, Kolkatta, India
Advisor: Swapan Kumar Datta

2008 Training on genetic engineering and crop improvement at the Department of Botany, University of Calcutta, India.

PUBLICATIONS

Summary: 13 Publications, **Google Scholar** (citations: 215, h-index: 8, i10-index: 7)

Published († mentored student, IF Impact factor)

14. **Sonawane BV***, Koteyeva N, Johnson D, Cousins AB (2020) Differences in leaf

anatomy determines temperature response of leaf hydraulic and mesophyll CO_2 conductance in phylogenetically related C_4 and C_3 grass species. *New Phytologist*, https://doi.org/10.1111/nph.17287 (IF 8.52; ***** co-corresponding author).

13. Ely KS, Roger A, Agarwal DA,…**Sonawane BV**, *et al*. (2021) A reporting format for leaf-level gas exchange data and metadata. *Elcologial Informatics* 61: 101232. (IF 2.51).
12. **Sonawane BV*** and Cousins AB (2020) Mesophyll CO_2 conductance and leakiness are not responsive to short- and long-term soil water-limitations in the C_4 plant *Sorghum bicolor*. *The Plant Journal* 103(4): 816-830. (IF 6.14; * co-corresponding author).
11. Pathare VS, **Sonawane BV**, Koteyeva N and Cousins AB. (2020) C4 grasses adapted to low precipitation habitats show traits related to greater mesophyll conductance and lower leaf hydraulic conductance. *Plant, Cell and Environment* 43(8): 1897-1910 (IF 6.36).
10. Cousins AB, Mullendore DL and **Sonawane BV** (2020) Recent developments in mesophyll conductance in C_3, C_4, and crassulacean acid metabolism plants. *The Plant Journal* 101(4): 816-830. (IF 6.14).
9. **Sonawane BV** and Cousins AB. (2019) Uncertainties and limitations of using ^{13}C and ^{18}O leaf isotope exchange to estimate the temperature response of mesophyll CO_2 conductance in C_3 plants. *New Phytologist* 222(1): 122-131. (IF 8.52).
8. Pang N, Xie Y, Oung HMO, **Sonawane BV**, Fu X, Kirchhoff H, Cousins AB, Chen S. (2019) Regulation and stimulation of photosynthesis of mixotrophically cultured *Haematococcus pluvialis* by ribose. *Algal Research* 39: 101443. (IF 4.0).
7. **Sonawane BV***, Sharwood RE, Whitney SM, Ghannoum O. (2018) Shade compromises the photosynthetic efficiency of NADP-ME less than PEP-CK and NAD-ME C_4 grasses. *Journal of Experimental Botany* 69(12): 3053-3068. (IF 5.36; * corresponding author).
6. **Sonawane BV***, Sharwood RE, von Caemmerer S, Whitney SM, Ghannoum O. (2017) Short-term thermal photosynthetic responses of C_4 grasses are independent of the biochemical subtype. *Journal of Experimental Botany* 68(20): 5583-5597. (IF 5.35; * corresponding author).
5. Sharwood RE, **Sonawane BV**, Ghannoum O, Whitney SM. (2016) Improved analysis of C_4 and C_3 photosynthesis *via* refined *in vitro* assays of their carbon fixation biochemistry. *Journal of Experimental Botany* 67(10): 3137-3148. (IF 5.83).
4. Pathare V, Srivastava S, **Sonawane BV**, Suprasanna P. (2016) Arsenic stress affects the expression profile of genes of 14-3-3 proteins in the shoot of mycorrhiza colonized rice. *Physiology and Molecular Biology of Plants* 22(4): 515-522. (IF 1.52).
3. Sharwood RE, **Sonawane BV** and Ghannoum O. (2014) Photosynthetic flexibility in maize exposed to salinity and shade. *Journal of Experimental Botany* 65(13): 3715-3724. (IF 5.52).
2. Ghodke AB†, Chavan SG, **Sonawane BV** and Bharose AA. (2012) Isolation and *in*

vitro identification of proteinase inhibitors from soybean seeds inhibiting *Helicoverpa* gut proteases. *Journal of Plant Interaction* 8(2): 170-178. (IF 0.89).

1. Suprasanna P, **Sonawane BV** and Patade VY. (2012) *In vitro* mutagenesis and selection for crop improvement: strategies and prospects. In: Kozgar MI, Khan S (Eds) Induced mutagenesis in crop plants. *Bioremediation, Biodiversity and Bioavailability* 6 (1): 6-14.

Conference proceedings

Nikam AA, **Sonawane BV**, Devarumath RM, Tawar PN and Kawar PG. (2011) Study of salt stress on irradiated callus of Sugarcane cultivar Co 86032. 4th International sugar conference on balancing sugar and energy production in developing countries: sustainable technologies and marketing strategies at New Delhi, India, Nov 21-25.

Popular articles

3. **Sonawane BV,** Ghodke AB, Sutar SR and Chavan SG. (2012) Role of *in vitro* mutagenesis in crop improvement, *Agrobios Newsletter* 11(2):15-17.
2. Pawar BD, **Sonawane BV**, Kale PB (2012) Antimicrobial peptides in plant defense, *Agrobios Newsletter* 11(6):66-68.
1. Kale PB, **Sonawane BV**, Pawar BD, Mirajkar SJ. (2012) Biotechnology for drought and temperature stress, *Agrobios Newsletter* 11(6):13-14.

AWARDS and HONORS (approximate amount 130,000 USD)

2019	Travel award for the 28th western photosynthesis congress, Friday Harbor, WA, USA (USD $300).
2013-2014	Australian research council- Discovery postgraduate research award, Western Sydney University, NSW, Australia (33,728 AUD).
2014-2016	Hawkesbury institute for the environment postgrad research award, Western Sydney University, NSW, Australia (67,456 AUD).
2014	Stable isotopes in the biosphere systems-2014 workshop award, Australian National University, Canberra, Australia.
2013	Australian postgraduate research scholarship, The University of Newcastle, Australia (86,285 AUD; declined).
2008	Indian academy of sciences summer research fellow at the University of Kolkata, WB, India.
2007-2009	Department of biotechnology fellowship of Govt. of India for the M. Sc. Agriculture Biotechnology program.

CONTRIBUTES PRESENTATIONS (* *presenting researcher*)

Oral

2019 **Sonawane BV*** and Cousins AB. Leaf carbon isotope composition as a screen for whole-plant water use efficiency in the C_4 plant *Sorghum bicolor*. *The 28th western photosynthesis conference*, Friday Harbor, Washington, USA, Jan 3-6.

2015 **Sonawane BV*,** Sharwood RE, Whitney SM, von Caemmerer S, Ghannoum O. Short-term and long-term thermal photosynthetic responses in grasses*. ComBio 2015*, Melbourne, Australia, Sept 27-Octo 1.

2015 **Sonawane BV*,** Sharwood RE, Whitney SM, Ghannoum O. Thermal photosynthetic acclimation in C_4 grasses, *ARC-CoETP 2015*, Canberra, Australia, May 14-15.

2014 **Sonawane BV*,** Sharwood RE, Whitney SM, Ghannoum O. Thermal responses of C_4 photosynthesis, *ARC-CoETP 2014*, Canberra, Australia, Nov 27-28.

2010 Kalwade SB*, **Sonawane BV**, Kawar PK, Devrumath RM. Genetic profiling of Sugarcane genotypes using Inter simple sequence repeat (ISSR) Markers. *National seminar on contemporary approaches in crop improvement*, UAS Banglore, India, Apr 21-23.

2010 **Sonawane BV***, Ghorpade BB, Chavan SG, Shinde SB and Patil FS. Molecular Characterization of Cowpea (*Vigna unguiculata* L. Walps) using molecular markers. *National conference on recent advances in plant sciences*, Pravaranagar, M.S., India, Feb 15-17.

2010 Ghorpade BB*, Ghangale S, **Sonawane BV,** Sonawane PU, and Madrap IA. Molecular marker analysis of the hybrid nature of the offspring of wild to cultivated Pigeon pea (*Cajanus cajan* (L.) millst). *National conference on recent advances in plant sciences*, Pravaranagar, M.S., India, Feb 15-17.

Poster

2019 **Sonawane BV**, Koteyeva NK, Johnson D, Cousins AB*. Temperature response of leaf H_2O and CO_2 diffusion in a C_3 and C_4 grass. *Gordon Research Conference: CO_2 Assimilation in Plants from Genome to Biome-Innovations in Photosynthesis to Solve Global Challenges,* Grand Summit Hotel at Sunday River, Newry, ME, USA, Jun 9-14.

2020 Cousins AB*, **Sonawane BV**, Braud M, *et al.* Leaf carbon isotope composition in diverse sorghum lines. *Genomic Sciences Program Annual Meeting*, Washington, DC, Feb 23-26.

2019 Cousins AB*, **Sonawane BV**, Veley K, *et al.* Leaf carbon and nitrogen isotope composition in diverse sorghum lines under differential water and

nitrogen treatments. *Genomic Science Program Annual Meeting at Tyson's Corner*, VA, USA, Feb 25-27.

2018 Cousins AB*****, **Sonawane BV**, Veley K, *et al.* Leaf carbon and nitrogen isotope composition in diverse sorghum lines under differential water and nitrogen treatments. *Genomic Science Program Annual Meeting*, Washington, DC, USA, Feb 25-28.

2014 **Sonawane BV***, Sharwood RE, Whitney SM, Ghannoum O**.** Thermal photosynthetic responses of C_4 grasses with different biochemical subtypes. *Gordon Research Conference: CO_2 Assimilation in Plants: Genome to Biome-Gaining Insights from Evolution to Mitigate a Challenging Future*, Waterville Valley, NH, USA, Jun 8-13.

2013 Sharwood RE*, **Sonawane BV** and Ghannoum O. Investigating the plasticity of the Maize CCM to environmental stress. *The 2013 International Symposium on C_4 and CAM Plant Biology*, University of Illinois, USA, Aug 6-9.

2010 **Sonawane BV***, Ghorpade BB, Ghodke AB, Ghuge SA and Patil FS. A comparative analysis of genetic diversity of cowpea (*Vigna unguiculata* (L.) Walps) genotypes using RAPD and ISSR markers. International symposium on current status and opportunities in medicinal and aromatic plants, Central institute of medicinal and aromatic plants, Lucknow, India, Feb 21-24.

2010 Ghodke AB*, Bharose AA., Sonawane PU, Chavan SG, **Sonawane BV** and Ghuge SA. Visualization of proteinase inhibitors of soybean (*Glycin max*) against *Helicoverpa* gut proteases. International conference on "Frontiers of biological sciences". *Agricultural Biotechnology Section*, Department of Life Science, National Institute of Technology, Rourkela, India, Oct 1-3.

2010 Chavan SG*, Sonawane PU, Ghodke AB, **Sonawane BV**, Ghuge SA and Patil FS. Molecular characterization of seed-borne virus causing mosaic disease in cowpea. International conference on "Frontiers of biological sciences." *Agricultural Biotechnology Section*, Department of Life Science, National Institute of Technology, Rourkela, India, Oct 1-3.

PROGRAM DEVELOPED

2019 Sonawane V and Sonawane BV. Pyleafarea: Leaf area calculator. https://pypi.org/project/pyleafarea/

TEACHING

2019 Methods in Plant Physiology- BIO 504. My role was to revise existing course materials and develop new lessons for Leaf Photosynthesis Section with Dr. Patrick Ellsworth and under the supervision of the section lecturer (Prof. Asaph B. Cousins)

2010 Techniques in Molecular Biology- MBB 505 My role was to develop new hands-on experiment protocol under the supervision of course teacher (Prof. Shivaji P. Mehtre)

MENTORSHIP

Name (current position) and my role

2018-2020 Andrew Zapata (Undergrad student, Washington State University, USA)

I mentored Andrew to prepare leaf samples for stable isotope analysis, data management and analysis.

2018 Kuenzang Om (Master Student, Washington State University, WA, USA)

I helped Kuenzang to learn a variety of plant physiology and biochemistry techniques during her early stage of research assistant career at Washington State University, WA, USA.

2017-2018 Vishal Sonawane (Technology Lead, Infosys, TX, USA)

I mentored Vishal to prepare leaf samples for isotope analysis and data handling. We together developed a python-based leaf image analysis program. at Washington State University, WA, USA.

2015 Fiona Koller (Lab Technician, Western Sydney University, Australia)

I helped Fiona to learn a variety of plant physiology and biochemistry techniques at Western Sydney University, Australia.

2010 Avinash Karpe (Postdoc, CSIRO, Australia)

I mentored Avinash in plant tissue culture and biochemical assays during his Master's research traineeship in 2010.

2009 Amol Ghodke (Postdoc, The University of Queensland, Australia))

I mentored Amol in a variety of biochemical and molecular skills during his Master's in 2009. We co-authored a manuscript "2".

2009 Sachin Chavan (Postdoc, Western Sydney University, Australia))

I helped teach Sachin in a variety of laboratory and data analysis skills during his Master's in 2009. We co-authored a manuscript "2".

OUTREACH and SERVICES

2021-present **Associate Editor** – AoB PLANTS

2017-present **Member** - Global Nagari Foundation. Actively mentoring Z. P. Primary School, Ramawadi, Sangmaner, Ahmednagar, MS, India since 2019.

2016-present **Reviewer** for the *Journal of Experimental Botany, The Plant Journal, New Phytologist, Photosynthesis Research, Plant, Cell and Environment.*

2019-2020 **President** - Washington State University postdoctoral and research professional association.

2020 **Hiring committee member** - For the position of Scientific Assistant at the Stable Isotope Core Laboratory, WSU, Pullman, WA.

2019 **Judge** - Showcase for undergraduate research and creative activities, Washington State University, Pullman, WA, USA.

2019 **Judge** - The graduate and professional student association research expo,Washington State University, Pullman, WA, USA.

2018 **Judge** - Showcase for undergraduate research and creative activities-2018, Washington State University, Pullman, WA, USA.

2005-2006 **Member** - Student council, College of Agricultural Biotechnology, Pravaranagar, MS, India.

MEDIA COVERAGE

2017 Australia's native grasses give clues about crop responses to global warming https://www.photosynthesis-research.org/research/2018/australias-native-grasses-give-clues-about-crop-responses-to-global-warming/

2017 Balasaheb Sonawane: Sweet C_4 photosynthesis. http://photosynthesis.org.au/in-conversation-with-our-people/balasaheb-sonawane-sweet-c4-photosynthesis/

2016 Balasaheb Sonawane's India trip in march 2016. *The leaflet* (20) 8. http://photosynthesis.org.au/wp-content/uploads/2014/12/The-Leaflet-Issue-20-April-May-2016.pdf