

Satheesh Kumar Subramanian

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EDUCATION

Ph.D (Agriculture): Agronomy **May 2013**

Dissertation: Agronomical, physiological, and biochemical approaches to characterize sweet sorghum genotypes for biofuel production
Kansas State University, Manhattan, Kansas, United States of America

M.Sc (Agriculture): Crop Physiology **May 2002**

Thesis: Effect of certain pre-harvest nutrient treatments on fruit growth, yield and quality of banana cv. Rasthali (AAB)
Tamil Nadu Agricultural University, Coimbatore, Tamil Nadu, India

B.Sc (Agriculture): First Class **May 2000**

Tamil Nadu Agricultural University, Coimbatore, Tamil Nadu, India

PROFESSIONAL EXPERIENCE

Assistant Professor **Jan' 2023 - Till Now**

Department of Crop Physiology,
SRS Institute of Agriculture and Technology
Vedasandur, Dindigul,
Tamil Nadu, India

Courses Teaching:

CRP 101 Fundamentals of Crop Physiology

Assistant Professor **Aug - Dec' 2022**

Department of Agronomy
Jaya Agriculture College
Affiliated to TNAU, Vyasapuram
Arakkonam, Tamil Nadu, India

Courses Taught:

AGR 351 Weed and Water Management
CRP 101 Fundamentals of Crop Physiology

Assistant Professor **Sept' 2019 - Feb'2021**

Department of Agronomy
Hamelmo Agricultural College
P.O. 397, Keren, Eritrea

Courses Taught (Undergraduate):

AGRO 431 Agro-Climatology
AGRO 331 Eco-Physiology of Crops
AGRO 332 Plant Water Relations

Agronomist**Jan' 2018-2019**

Research and Development Centre

T.Stanes and Company Limited

Race Course Road,

Coimbatore-641018

Tamil Nadu

Duties and Responsibilities:

- Setting up experiments in coordination with senior scientists to assess physiological and biochemical responses of the plant to varied climatic conditions
- Submission of new projects for development and commercialization of products
- Support all biotechnological sections of the R&D for farm trials and consolidation of results
- Technical inputs for preparation of brochures/power point presentation and web site development

Assistant Professor**Oct' 2015 – Nov' 2016**

Department of Plant Sciences

College of Agriculture and Veterinary Sciences

Ambo University, Ambo

P.B# 19, Ethiopia, East Africa

Courses Handled (M.Sc Degree):

Agrn521 Advanced Plant Physiology

CP515 Advanced Weed Ecology

AgCP501 Weed and Weed Management

CP522 Advanced Weed Management

Post Doctoral Associate:**April 2014 – March 2015**

Centre for Public Policy, Indian Institute of Management (IIM-B),

Bangalore

Worked in the project, **“Information, Market Creation and Agricultural Growth”**

Graduate Research Assistant (GRA)**August 2006 – January 2012**

Department of Agronomy, KSU, Manhattan

Research experience:

- Screened 280 sweet sorghum germplasm collection for biofuel production traits under field conditions
- Identified morpho-physiological determinants of sugar yield in sweet sorghum
- Optimized harvesting time in sweet sorghum var. M81E

**TECHNICAL
SKILLS**

- Tested efficacy of chemical sterilents and deheading in sweet sorghum stalk yield improvement
- Conducted experiments in controlled environment for studying the effect of drought and high temperature stress on sugar yield in sweet sorghum

Additional work experience apart from my Ph.D research,

- Screened US elite rice genotypes for salinity tolerance using conetainers
- Conducted heat tent experiment for high temperature tolerance during reproductive stages in Soybean and Grain sorghum under field conditions
- Evaluated effects of protein based chelated nutrients (Prathista Industries, India) on Soybean and Grain sorghum yield and quality under controlled and rain-fed conditions
- Evaluated and identified Switchgrass genotypes for biomass production
- Taught graduate students on plant responses to abiotic stresses

Senior Research Fellow: Drought QTL Laboratory

February 2003 – June 2006

Tamil Nadu Agricultural University, Coimbatore, Tamil Nadu, India

Research experience:

- Conducted field trials using large rice germplasm in upland conditions and rainfed ecosystems to assess the physiological adaptive mechanisms of plants linked to drought tolerance
- Identified key drought-related physiological traits for mapping QTLs using recombinant inbred lines (RILs) developed from IR20xNootripathu
- Assisted in introgressing drought tolerance QTLs into drought susceptible ruling variety (IR20) through Marker Assisted Selection (MAS)
- Assisted in mapping QTLs linked to epicuticular wax content in DH lines of rice (CT9993/IR62266) under water stress conditions

Molecular Biology -

- Genomic DNA separation technique and polymerase chain reaction

Abiotic Stress Physiology & Characterization -

- Identification and characterization of morphological adaptations like epicuticular wax, leaf rolling, leaf drying, leaf angle, and stay green traits
- Quantification of physiological and biochemical indicators such as plant water status, pigment loss, membrane function, PAR measurements (Ceptometer), LICOR gas exchange measurements, chlorophyll florescence (Fluorometer), canopy temperature, leaf porometer, amino acid and antioxidants

- Root architecture measurements (WINRHIZO probe) like root thickness, root length and volume
- Pollen microscopic studies - pollen viability and germination tests;
- Sugar metabolizing enzymes
- Soil characteristics - soil hardness (Penetrometer) and soil moisture content (Theta probe)
- Yield and yield components

Fermentation Techniques - HPLC analysis of carbohydrate fractions, Cell culture and fermentation of sugars

Computer and Statistics - Proficient in Microsoft office applications, Sigma plot, NTSYSPC2.0, WinQTL cartographer, MAPMAKER, Experimental designs and Statistical analysis (Version, SAS 9.2) and Principal component analysis

PERSONAL STRENGTH

- Quick learner and hardworking
- Resourceful, proactive and have initiative
- Effective communicator - can liaise with scientists and communicate ideas with a wide range of people
- Excellent research and report writing skills
- Excellent intercultural experience; ability to interact well with people of various intercultural backgrounds

SCHOLARSHIPS AND AWARDS

- Ray Lamond Scholarship (2011) - Awarded Competitive Scholarship for Graduate Students from Department of Agronomy, Kansas State University
- Ray I. Throckmorton Scholarship (2008) - Awarded Competitive Scholarship for Graduate Students from Department of Agronomy, Kansas State University
- Graduate Research Assistantship (GRA) - Awarded Competitive 0.5 GRA for PhD Studies from Center for Sorghum Improvement and Center for Sustainable Energy, KSU
- Lectureship/Assistant Professorship - Passed National Eligibility Test (NET Certificate - 2003) for Research and Teaching in Plant Physiology, Conducted by Indian Council of Agricultural Research, New Delhi, India

PROFESSIONAL MEMBERSHIPS

- American Society of Agronomy (2007-2012)
- Crop Science Society of America (2007-2012)
- Soil Science Society of America (2007-2012)
- American Society of Plant Biologists (2007-2012)

POSTER PRESENTATIONS IN CONFERENCE AND MEETINGS

- **Satheesh K. Subramanian**, P.V. Vara Prasad, Scott A. Staggenborg, Jianming Yu and Praveen V. Vadlani. 2011. Characterization of sweet sorghum (*Sorghum bicolor* L. Moench) germplasm for growth, physiological and bioenergy traits under

irrigated and rain-fed conditions. Bioenergy symposium, April 27-28, Kansas State University, Manhattan, KS, USA

- **Satheesh K. Subramanian**, P.V. Vara Prasad, Scott A. Staggenborg, Jianming Yu, and Praveen V. Vadlani. 2009. Effect of Water Stress During Early Seed-Filling (Milking) on Sugar and Juice Volume of Sweet Sorghum Genotypes in Controlled Environments. Great Plains Sorghum Conference, Aug 11-12, Amarillo, TX, USA
- **Satheesh K. Subramanian**, P.V. Vara Prasad, Scott A. Staggenborg, Jianming Yu and Praveen V. Vadlani. 2009. Effect of Deheading and Chemical Sterilents on Juice, Stalk and Seed Yield of Sweet Sorghum Genotypes Under Field Conditions. Center for Sustainable Energy Annual Meeting, May 5, Kansas State University, Manhattan, KS, USA
- Boopathi, N. M., **S. Satheesh Kumar**, R. Chandra Babu, P. Shanmugasundaram, P. Jeyaprakash, S. Michael Gomez, D. Kumaresan and K. R. Biji. 2004. QTL mapping of drought resistance traits using locally adapted rice lines. Proceedings of 9th National Rice Biotechnology Network Meeting, April 15-17, New Delhi, India. p. 42.

**ORAL
PRESENTATIONS
IN CONFERENCE
AND MEETINGS**

- **Subramanian SK**, Prasad PVV, Staggenborg SA, Yu J and Vadlani PV. 2010. Effect of different harvest time on sugar and juice yield of sweet sorghum. 27th Sorghum Research and Utilization Conference and the Great Plains Sorghum Research Conference, 11-12 August, University of Nebraska-Lincoln Agricultural Research and Development Center, Mead, Nebraska, USA
- **Satheesh K. Subramanian**, P.V. Vara Prasad, Scott A. Staggenborg, Jianming Yu and Praveen V. Vadlani. 2009. Effect of Water Stress During Early Seed-Filling (Milking) on Sugar and Juice Volume of Sweet Sorghum Genotypes in Controlled Environments. Great Plains Sorghum Conference, Aug 11-12, Amarillo, TX, USA
- **Subramanian S**, Prasad P.V.V, Jeannotte R and Tuinstra MR. 2007. Physiological and biochemical responses of grain sorghum to foliar application of Glycine betaine under drought stress. Annual Meeting of American Society of Agronomy, 4 – 8 November, New Orleans, Louisiana, USA

**ARTICLES IN
INTERNATIONAL
JOURNALS**

- **Satheesh K. Subramanian** · P. V. Vara Prasad · Scott A. Staggenborg · Praveen V. Vadlani · Tesfaye Tesso. Characterization of sweet sorghum (*Sorghum bicolor* L. Moench) germplasm for growth, physiological and bioenergy traits under irrigated and rain-fed conditions. Genetic Resource and Crop Evolution (In Prep.)
- **Satheesh K. Subramanian**, P.V. Vara Prasad, Scott A. Staggenborg

and Praveen V. Vadlani. Effects of harvest time on juice yield of sweet sorghum. Ind. Crop Prod. (In Prep.)

- **Satheesh K. Subramanian**, P.V. Vara Prasad, and Scott A. Staggenborg. Morpho-physiological based screening of sweet sorghum genotypes for high sugar yield. Eur. J. Agron. (In Prep.)
- Michael Gomez, S., N. Manikanda Boopathi, **S. Satheesh Kumar**, T. Ramasubramanian, Zhu Chengsong, P. Jeyaprakash, A. Senthil, and R. Chandra Babu. 2009. Genetic linkage map construction and location of QTL for drought resistance traits in indica rice (*Oryza sativa* L.) lines adapted to target environments. Acta Physiol Plant. (Published online: 03 December 2009)
- Srinivasan, S., S. Michael Gomez, **S. Satheesh Kumar**, S. K. Ganesh, K. R. Biji, A. Senthil, and R. Chandra Babu. 2008. QTLs Linked to Leaf Epicuticular Wax, Physio-Morphological and Plant Production Traits under Drought Stress in Rice (*Oryza sativa* L.). Plant Growth Regulation. 56: 245-256.
- Kalyana Babu, A., N. Senthil, S. Michael Gomez, K. R. Biji, N. S. Rajendraprasad, **S. Satheesh Kumar**, and R. Chandra Babu. 2007. Assessment of genetic diversity among finger millet (*Eleusine coracana* (L.) Gaertn.) accessions using molecular markers. Genetic Resource and Crop Evolution. 54 (2): 399-404.
- Michael Gomez, S., **S. Satheesh Kumar**, P. Jeyaprakash, R. Suresh, K. R. Biji, D. Kumaresan, N. Manikanda Boopathi, Adam H. Price, and R. Chandra Babu. 2006. Mapping QTLs linked to physio-morphological and plant production traits under drought stress in rice (*Oryza sativa* L.) in the target environment. American Journal of Biochemistry and Biotechnology. 2(4): 161-169.
- Birendra Kumar, S., Michael Gomez, N. M. Boopathi, **S. Satheesh Kumar**, D. Kumaresan, K.R. Biji, B. Kalyan Babu, L. Rajendra Kumar and P. Shanmugasundaram, and Chandra Babu. 2005. Identification of microsatellite markers associated with drought tolerance in rice (*Oryza sativa* L.) using bulked line analysis. Tropical Agricultural Research. vol.17.
- Vivek, K. T., S. Michael Gomez, R. Suresh, **S. Satheesh Kumar**, P. Yogameenakshi, P. Chezian, N. M. Boopathi, P. Shanmugasundaram, and R. Chandra Babu. 2004. Genetic diversity analysis among rice accessions differing in drought tolerance using molecular markers. Journal of Food, Agriculture & Environment. 2(3&4): 217-222.
- Anitha, R., G. Saranya, S. Michael Gomez, K. R. Biji, **S. Satheesh Kumar**, and R. Chandra Babu. 2008. Identification of microsatellite markers associated with drought tolerance in rice (*Oryza sativa* L.) using bulked line analysis. Plant Archives, 8(1): 93-96.
- **Satheesh Kumar, S.**, and U. Bangarusamy. 2006. Effect of post

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- shooting applications of certain nutrients on fruit quality and post harvest storage life of banana cv. Rasthali Plant Archives. 6(1): 201-204
- Chandrasekhar, R., Chandra Babu, N. M. Boopathi, S. Michael Gomez, P. Yogameenakshi, **S. Satheesh Kumar**, P. Chezhan, K. T. Vivek, and P. Shanmugasundaram. 2004. Genetic analysis of rice accessions from diverse hydrological habitats using microsatellite markers. Plant Archives. 2. 267 - 274.
 - **Satheesh K. Subramanian.**, P.V. Vara Prasad, Scott A. Staggenborg, Jianming Yu, and Praveen V. Vadlani. 2009. Effect of Water Stress During Early Seed-Filling (Milking) on Sugar and Juice Volume of Sweet Sorghum Genotypes in Controlled Environments. Great Plains Sorghum Conference, Aug 11-12, Amarillo, TX, USA
 - **Subramanian, S.**, Prasad P.V.V, Jeannotte R, and Tuinstra MR. 2007. Physiological and biochemical responses of grain sorghum to foliar application of Glycine betaine under drought stress. Annual Meeting of American Society of Agronomy, 4 – 8 November, New Orleans, Louisiana, USA
 - Chandra Babu, R., S. Michael Gomez, **S. Satheesh Kumar**, K. R. Biji, N. Manikanda Boopathi, and R. Suresh. 2006. Molecular mapping and marker-assisted breeding for drought resistance in rice (*Oryza sativa* L.). Proceedings of the First International Conference and Practices in Biological Water Saving (ICTPB), Beijing, China 21-25 May p.4-79.
 - Srinivasan, S., R. Chandra Babu, **S. Satheesh Kumar**, S. Michael Gomez, and S. K. Ganesh. 2006. QTLs linked to leaf epicuticular wax, physio-morphological and plant production traits under water stress and non-stress conditions in rice (*Oryza sativa* L.). Proceedings of the First International Conference and Practices in Biological Water Saving (ICTPB), Beijing, China 21-25 May p.4-88.
 - Rajendra Prasad, N. S., R. Suresh, S. Michael Gomez, K. R. Biji, R. Beena, K. Babu, **S. Satheesh Kumar**, D. Kumaresan, and R. Chandra Babu. 2005. Identification of microsatellite markers linked to drought tolerance in rice using bulked line analysis. In: Proceedings of 5th International Rice Genetics Symposium, Manila, Philippines 19-23 November p.110.
 - Ranganathan Chandra., N. Manikanda Boopathi, S. Michael Gomez, **S. Satheesh Kumar**, D. Kumaresan, P. Jeyaprakash, L. Mahalingam, S. Mahendran, and P. Shanmugasundaram. 2005. QTL mapping of drought resistance and yield in rice: comparison across genetic backgrounds. In: Proceedings of 5th International Rice Genetics Symposium, Manila, Philippines 19-23 November p.110.
 - Chandra Babu, R., N. M. Boopathi, S. Michael Gomez, **S. Satheesh**

- Kumar**, R. Suresh, K. R. Biji, and P. Shanmugasundaram. 2005. Genetic enhancement of drought tolerance in rice: progress and limitations. Proceedings of International Conference on Plant Genomics and Biotechnology: Challenges and Opportunities during October 26-28 at IGAU, Raipur, India.
- Biji, K. R., R. Chandra Babu, P. Shanmugasundaram, S. Michael Gomez, and **S. Satheesh Kumar**. 2005. Marker assisted breeding for drought resistance improvement in rice (*Oryza sativa* L.). 2005. Proceedings of International Conference on Plant Genomics and Biotechnology: Challenges and Opportunities during October 26-28 at IGAU, Raipur, India. P 160.
 - Chandra Babu, R., P. Shanmugasundaram, S. Michael Gomez, N. Manikanda Boopathi, **S. Satheesh Kumar**, D. Kumaresan, K. R. Biji, R. Suresh, P. Jayaprakash, S. Gurumurthy, L. Mahalingam, S. Mahendran, S. K. Ganesh, S. Robin, R. Lafitte, G. Atlin, A. Price, and H. T. Nguyen. 2005. Molecular mapping for drought tolerance traits in rice (*Oryza sativa* L.): New and future developments. Proceedings of Inter Drought-II conference on Integrated approaches to sustain and improve plant production under drought stress. 24-28, September at University of Rome, Italy L 8.04.
 - Manikanda Boopathi, N., P. Chezian, P. Jeyaprakash, **S. Satheesh Kumar**, S. Michael Gomez, R. Suresh, G. Atlin, P. K. Subudhi, P. Shanmugasundaram, and R. Chandra Babu. 2005. QTL mapping of drought resistance traits using indica rice (*Oryza sativa* L.) lines adapted to target population of environment. Proceedings of Inter Drought-II conference on Integrated approaches to sustain and improve plant production under drought stress. 24-28, September at University of Rome, Italy P 6.05
 - Michael Gomez, S., R. Chandra Babu, P. Shanmugasundaram, **S. Satheesh Kumar**, R. Suresh, K. R. Biji, N. Manikanda Boopathi, P. Jeyaprakash, S. Gurumurthy, and A. Price. 2005. QTL mapping and marker assisted selection for drought tolerance in rice (*Oryza sativa* L.). Proceedings of Inter Drought-II conference on Integrated approaches to sustain and improve plant production under drought stress. 24-28, September at University of Rome, Italy P 6.19
 - Shanmugasundaram, P., R. Suresh, R. Chandra Babu, S. Michael Gomez, **S. Satheesh Kumar**, K. R. Biji, S. K. Ganesh, A. Manickavelu, and P. Vivekanandan. 2005. Drought tolerant rice varieties through conventional breeding. Proceedings of Inter Drought-II conference on Integrated approaches to sustain and improve plant production under drought stress. 24-28, September at University of Rome, Italy P 7.26
 - Suresh, R., P. Shanmugasundaram, R. Chandra Babu, S. Michael Gomez, N. S. Rajendra Prasad, K. R. Biji, **S. Satheesh Kumar**, R. Beena, B. Kalyan Babu, and D. Kumaresan. 2005. Early generation screening for yield and secondary traits associated with drought

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- tolerance in rice (*Oryza sativa* L.). 2005. Proceedings of Inter Drought-II conference on Integrated approaches to sustain and improve plant production under drought stress. 24-28, September at University of Rome, Italy P 7.31
- Boopathi, N. M., R. Chandra Babu, P. Shanmugasundaram, P. Chezhan, P. Jeyaprakash, **S. Satheesh Kumar**, S. Michael Gomez, R. Suresh, P. Yogameenakshi, Gary Atlin, and P. K. Subudhi. 2004. Identification of QTLs for drought resistance in rice line adapted to target population of environment. Proc. of World Rice Research Conference, Tsukuba, Japan 5-7 November. p.330.
 - Chandra Babu, R., N. M. Boopathi, S. Michael Gomez, D. Kumaresan, **S. Satheesh Kumar**, and P. Shanmugasundaram. 2004. Molecular marker-assisted breeding for drought resistance in rainfed rice. Proceedings of International symposium on Rainfed rice ecosystems: Perspective and potential held during October 11-13 at IGAU, Raipur, India. p. 12.
 - Suresh, R., P. Shanmugasundaram, R. Chandra Babu, P. Jeyaprakash, S. Michael Gomez, **S. Satheesh Kumar**, and P. Chezhan. 2004. Genetic analysis of physio-morphological traits associated with drought tolerance in rice across the environments. Resilient crops for water limited environments workshop May 24-28, Cuernavaca, Mexico.
 - Suresh, R., P. Shanmugasundaram, N. S. Rajendra Prasad, S. Michael Gomez, **S. Satheesh Kumar**, and R. Chandra Babu. 2006. Genetic analysis of yield components and Physiological traits under irrigated and water stress environments in rice (*Oryza sativa* L.). In: proceedings of the Second National Plant Breeding Congress held at Tamil Nadu Agricultural University, Coimbatore, India 1-3 March
 - Chandra Babu, R., M. N. Boopathi, D. Kumaresan, **S. Satheesh Kumar**, S. Michael Gomez, P. Jeyaprakash, and P. Shanmugasundaram. 2004. Increasing rice production in water limited environments using biotechnological approaches. Proc. National conference on Increasing rice production in water limited environments during December 3-4 at Ranchi, India. p. 17.
 - Suresh, R., P. Shanmugasundaram, R. Chandra Babu, **S. Satheesh Kumar**, and S. Michael Gomez. 2004. SSR polymorphism specific to heterosis for yield and drought related traits in rice. Proc. National conference on Increasing rice production in water limited environments during December 3-4 at Ranchi, India. p. 19.
 - Birendra Kumar., R. Chandra Babu, S. Michael Gomez, N. M. Boopathi, **S. Satheesh Kumar**, D. Kumaresan, K.R. Biji, B. Kalyan Babu, L. Rajendra Kumar, and P. Shanmugasundaram. 2004. SSR markers associated with drought resistance in rice. Proc. of National symposium on 'Frontiers in biotechnology held during 27-28.10.04 at Bharathiar University, Coimbatore, India. p. 37.

- Michael Gomez, S., R. Chandra Babu, P. Shanmughasundaram, **S. Satheesh Kumar**, D. Kumaresan, and K. R. Biji. 2004. Marker aided selection for drought resistant improvement in rice. IX National rice biotechnology network meeting 15-17 April, NASC Complex, New Delhi
- Kumaresan, D., R. Chandra Babu, P. Shanmughasundaram, P. Jeyaprakash, **S. Satheesh Kumar**, S. Michael Gomez, S. Srinivasan, and K. R. Biji. 2004. Mapping QTLs linked to drought tolerance in rice. IX National rice biotechnology network meeting 15-17 April, NASC Complex, New Delhi
- Boopathi, N.M., **S. Satheesh Kumar**, R. Chandra Babu, P. Shanmughasundaram, P. Jeyaprakash, S. Michael Gomez, D. Kumaresan, and K. R. Biji. 2004. QTL mapping of drought resistance traits using locally adopted rice lines. IX National rice biotechnology network meeting 15-17 April, NASC complex, New Delhi
- Chandra Babu, R., N. M Boopathi, P. Shanmughasundaram, P. Jeyaprakash, P. Chezhan **S. Satheesh Kumar**, P. Yogameenakshi, R. Chandirakala, S. Michael Gomez, and R. Suresh. 2004. Genetic improvement of rice for water-limiting environments: progress and future perspectives. IX National rice biotechnology network meeting 15-17 April, NASC complex, New Delhi

S. Satheesh Kumar., A. Senthil, R. Chandra Babu, O. S. Kandasamy. 2004. Biotechnological approaches for Weed Management. CASA training manual on Integrated Weed Management technology- Present status and Future Challenges. Feb' 19 – Mar 10, TNAU, Coimbatore