

Global Water Security Conference for Agriculture and Natural Resources

An ASABE Global Initiative Conference

Organized jointly with the Indian Society of Agricultural Engineers (ISAE)

3-6 October 2018 – Taj Krishna, Hyderabad, India

PROGRAM

Wednesday, October 3rd

- 10:00AM-4:00PM Pre-Conference Symposium for Agricultural and Biological Academic
Department Leaders
Location: Emerald I
- The goal of the symposium is to explore options for, and to promote, the following among departments in different countries:
- Undergraduate student exchange
 - Graduate student exchange
 - Faculty development
 - Research and outreach program collaborations
- This is an opportunity for ABE department leaders (Deans, Department Heads/Chairs) to learn about each other's departments and identify potential opportunities for exchange and collaboration.
Cost: \$75.00 - Lunch will be provided.
- 6:30-9:00 PM Opening Reception (Hotel Taj Falaknuma. Transportation provided)

Thursday, October 4th

- 9:00-10:30 AM Conference Inauguration
Location: Grand Ballroom
- Welcome note by conference Co-Chair (Indrajeet Chaubey)
- Welcome note by ASABE Past-President (Stephen W. Searcy)
- Welcome note by ISAE President and conference Co-Chair (Indra Mani)
- Welcome note by the vice-chancellor of Professor Jayashankar Telangana State Agricultural University (V. Praveen Rao)
- Welcome note by the USA Consulate General (Katherine B. Hadda)
- Plenary Keynote: Sonny Ramaswamy, Northwest Commission on Colleges and Universities (NWCCU), Redmond, Washington, USA
- Plenary Keynote: Asit Biswas, Lee Kuan Yew School of Public Policy, National University of Singapore, Singapore



Lighting of lamp to formally inaugurate the conference

Brief comments by the Telangana Chief Minister or Minister of Irrigation

10:30-11:00 AM
Location:

Break
Gardenia Lawn

11:00-12:30 PM
Session Co-Chairs:

Agricultural Water Scarcity and Security Highlighted Speakers/Discussion

R. Daren Harmel, USDA-ARS, Fort Collins, Colorado, USA

P.R. Ojasvi, IISWC, Dehradun, Uttarakhand, India

Rapporteur:

Sumit Sen, IIT, Roorkee, Uttarakhand, India

Location:

Grand Ballroom

Speakers:

Steven R. Evett, USDA-ARS, Amarillo, Texas, USA - *Water and Food Security Challenges-ARS and ASA Respond (GWS-0293)*

Vimlendra Sharan, FAO Liaison Office, Washington DC, USA - *Towards a Water and Food Secure Future: Critical Perspectives for Policy-Makers (GWS-0273)*

Timothy Williams, International Water Management Institute (IWMI), Accra, Ghana - *Navigating Troubled Waters: Pathways to Improved Water Security in Africa (GWS-0271)*

12:30-2:00 PM
Session Co-Chairs:

Lunch with Keynote Addresses

Ahamada Zziwa, Makerere University, Kampala, Uganda

T.B.S. Rajput, IARI, New Delhi, India

Rapporteur:

Susama Sudhisri, IARI, New Delhi, India

Location:

Grand Ballroom

Speakers:

Marty Matlock, University of Arkansas, Fayetteville, Arkansas, USA - *Risks to Food Supply Chains from Water Insecurity (GWS-0298)*

S.P. Jadhav, Jain Irrigation Systems Ltd. (JISL), Jalgaon, Maharashtra, India - *Achieving Socio-Economic Security by way of Water Conservation and Higher Food Production through Integrated Micro Irrigation Solutions (GWS-0297)*

2:00-3:30 PM

POSTER SESSION - Agricultural Water Security and Identifying and Treating and Managing Water Suppliers

Location:

Gardenia Lawn

3:30-4:00 PM

Break

Location:

Gardenia Lawn



4:00-5:30 PM

Concurrent Sessions on Agricultural Water Scarcity and Security

- Water Policies and Governance Strategies

Session Co-Chairs: Bradley Rein, USDA-NIFA, Washington DC, USA
R.C. Srivastava, RAU, Pusa, Bihar, India

Rapporteur: Pramod Kumar Singh, GBPUAT, Pantnagar, Uttarakhand, India

Location: Emerald I

Speakers: Man Singh, Water Technology Center, Indian Agricultural Research Institute, New Delhi, India - Invited Talk- *Accelerating Indian Agriculture by Creating Large Scale Irrigation and Drainage Infrastructure*

James Houser, Appalachian State University, Boone, North Carolina, USA - *Sustainable Water Use: Agricultural Applications and Conflicts* (GWS-0083)

Ravichandran Kannan, Tamil Nadu Agricultural University, Coimbatore, Tamil Nadu, India - *Improved Drinking Water Service Delivery: A case Study from Morappur under National Drinking Water Security Pilot Project by Ministry of Water Resources, Government of India* (GWS-0151)

Daren Harmel, ARS-USDA, Fort Collins, Colorado, USA - *How Clean is Clean Enough? Assessing Edge-of-Field Nutrient Runoff* (GWS-0088)

Gaurav Mittal, University of California, Berkeley, California, USA - *Drought's Effect on the Syrian Mitigation Crisis* (GWS-0268)

- Climate Change Impacts

Session Co-Chairs: P. Nejadhashemi, Michigan State University, East Lansing, Michigan, USA
S. K. Ambast, IIWM, Bhubaneshwar, Orissa, India

Rapporteur: Neelam Patel, WTC, IARI, New Delhi

Location: Emerald II

Speakers: Sanjay Shukla, University of Florida, Gainesville, Florida, USA - *Water Availability in Semi-Arid South India: Historical Trends and Future Projections under Changed Climate and Irrigation Demand* (GWS-0108)

Sarmistha Singh, Purdue University, West Lafayette, Indiana, USA - *Effect of ENSO Modulation by Decadal and Multi-decadal Oscillations on Continental US Streamflows* (GWS-0102)

Cicily Kurian, Indian Institute of Technology Madras, Chennai, Tamil Nadu, India - *An Analysis of the Sensitivity of Calibration Objective Function on a Flood Forecasting System* (GWS-0136)

Ramesh Rudra, University of Guelph, Guelph, Ontario, Canada - *Change in Hydrologic Regimes due to Global Warming in Humid and Temperate Climate and their Possible Impact on Water Quantity and Quality* (GWS-0089)



Kirthiga S.M., Indian Institute of Technology Madras, Tamil Nadu, India - *Feasibility of Regional Climate Model in Generating High Resolution Medium-Range Weather Forecasts for Real-Time Applications in Agricultural and Hydrological Studies* (GWS-0242)

- Case Studies of Water Security and Scarcity

Session Co-Chairs: Darrell W. Donahue, Michigan State University, East Lansing, Michigan, USA
Man Singh, WTC, IARI, New Delhi, India
Rapporteur: Ram Mandir Singh, BHU, Varanasi, Uttar Pradesh, India
Location: Sapphire
Speakers: Sierra Young, Iowa State University, Ames, Iowa, USA - *Unmanned Aerial Systems for Agricultural Water Measurement and Management* (GWS-0269)

Amarender Reddy, National Institute of Agricultural Extension Management, Hyderabad, Telangana, India - *Removing Implementation Hurdle in Increase Water Use Efficiency in Canal System* (GWS-0141)

Pramod Kumar Singh, College of Technology, G.B. Pant University of Agriculture and Technology, Pantnagar, Uttarakhand, India - *Water Management of Horticultural Crops Under Open and Protected Cultivation* (GWS-0021)

K.Sreenivas Reddy, Central Research Institute for Dryland Agriculture, Hyderabad, Telangana, India - *Agricultural Water, Food and Nutritional Security through OFR based IFS Models for Small Landholders of SAT Regions: A Success Story in Tribal Region of Telangana, India* (GWS-0126)

Chiranjeev Pant, College of Technology, G.B. Pant University of Agriculture and Technology, Pantnagar, Uttarakhand, India - *Temporal Analysis of Damages to Natural Resources of Rural India due to Extreme Floods* (GWS-0070)

7:00-9:00 PM

Dinner with Invited Speakers

Session Co-Chairs: Rebecca L. Muenich, Arizona State University, Tempe, Arizona, USA
Balaji Narsimhan, IIT Madras, Chennai, Tamil Nadu, India
Rapporteur: Kritika Kothari, TAMU, College Station, Texas, USA
Location: Grand Ballroom
Speakers: Vimal Mishra, Indian Institute of Technology Gandhinagar, Gandhinagar, Gujarat, India - *Great Droughts in India: The Role of Water Management in Ensuring Food Security* (GWS-0301)

Venkat V. Rao, National Remote Sensing Center, Indian Space Research Organization, Hyderabad, Telangana, India - *Water Informatics for Improved Water Management* (GWS-0303)



Friday, October 5th

- 9:00-10:00 AM Keynote Addresses
Session Co-Chairs: Saied Mostaghimi, Virginia Polytechnic and State University, Blacksburg, Virginia, USA
Ashish Pandey, IIT, Roorkee, Uttarakhand, India
Rapporteur: Shanker Prasad, WALAMTARI, Hyderabad, Telangana, India
Location: Grand Ballroom
Speakers: Harshadeep Nagaraja Rao, The World Bank, Washington DC, USA - *A New World of "Disruptive" Technologies for HydroInformatics in Water Resources Management (GWS-0294)*

Felix Reinders, ICID, Silverton, Pretoria, South Africa - *A Water Secure World Free of Poverty and Hunger: Challenges of the Water-Energy-Food Nexus (GWS-0302)*
- 10:00-10:30 AM Highlighted Speakers/Discussion
Session Co-Chairs: Vaishali Sharda, Kansas State University, Manhattan, USA
Ajai Singh, Central University of Jharkhand, Ranchi, Jharkhand, India
Rapporteur: Ravi Babu G., Acharya N.G. Ranga Agricultural University, Bapatla, Andhra Pradesh, India
Location: Grand Ballroom
Speakers: K. Yella Reddy, Acharya N.G. Ranga Agricultural University, Bapatla, Andhra Pradesh, India - *Water Footprints and Virtual Water Approaches for Improved Water Management (GWS-0277)*

Michele Reba, United States Department of Agriculture-Agricultural Research Service, Jonesboro, Arkansas, USA - *Declining Water Table in the Humid Mid-South US: Challenges and Opportunities (GWS- 0254)*
- 10:30-11:00 AM Break
Location: Gardenia Lawn
- 11:00-12:30 PM Concurrent Sessions on Identifying, Managing, and Treating Conventional and Alternative Agricultural Water Supplies
 - Advanced Wastewater Treatment
Session Co-Chairs: A. Anandhi, Florida A&M University, Tallahassee, Florida, USA
Ashwin B. Pandya, ICID, New Delhi, India
Rapporteur: Ranu Rani Sethi, IIWM, Bhubaneswar, Orissa, India
Location: Emerald I
Speakers: Devanand Maski, University of Agricultural Sciences, Raichur, Karnataka, India - *Sustainable Wastewater Treatment and Bio-energy Production through Microbial Fuel Cell Technology (GWS-0078)*

Jaskaran Dhiman, McGill University, Montreal, Québec, Canada - *Use of Hydrogel and Biochar Technology to Reduce Heavy Metal Uptake in Wastewater Irrigated Potato Plants (GWS-0213)*



Deepika Bhatia, Lovely Professional University, Jalandhar, Punjab, India - *Industry Wastewater Treatment and Reuse of Treated Wastewater for Agriculture in India* (GWS-0022)

Christopher Nzediegwu, McGill University, Montreal, Québec, Canada - *Wastewater as an Alternative Source of Irrigation Water for Developing Countries* (GWS-0266)

Prasad Kulkarni, University of Agricultural Sciences, Raichur, Karnataka, India - *Studies on Development of Engineered Wetlands System for Irrigational Reuse or Safe Disposal of Municipal Sewage* (GWS-0225)

- Optimizing Available Water Supplies and Use

Session Co-Chairs: M. Gitau, Purdue University, West Lafayette, Indiana, USA
A.R. Mishra, IIWM, Bhubaneshwar, Orissa, India

Rapporteur: Arun Kumar Raja, SBI, Coimbatore, Tamil Nadu, India

Location: Emerald II

Speakers: Michael Scobie, University of Southern Queensland, Toowoomba, Queensland, Australia - *Transdisciplinary Research to Improve Food Production for Marginal Farmers in the Eastern Gangetic Plains* (GWS-0075)

Vikram Kumar, Indian Institute of Technology, Roorkee, Uttarakhand, India - *Optimal Crop Planning under the Constraint of Area and Water Demand using Multi-Objective Programming* (GWS-0199)

Kamlesh Narayan Tiwari, Indian Institute of Technology, Kharagpur, West Bengal, India - *Measurement of Rainfall Interception and Canopy Effects on Stemflow and Throughfall under Nine Mature Tree Stands* (GWS-0140)

Poyan Nejadhashemi, Michigan State University, East Lansing, Michigan, USA - *Optimization for Sustainable Agricultural Production* (GWS-0045)

Isa Kabenge, Makerere University, Kampala, Uganda - *LANDSAT Imagery Relationships for Raw Water Quality Assessment in Inner Murchison Bay, Lake Victoria* (GWS-0031)

- Water Harvesting

Session Co-Chairs: Anish Jantrania, Texas A&M University, College Station, Texas, USA
M Uma Devi, PJTSAU, Hyderabad, Telangana, India

Rapporteur: Cicily Kurien, IIT Madras, Chennai, Tamil Nadu, India

Location: Sapphire

Speakers: Gaurav Kant Nigam, Indira Gandhi Krishi Vishwavidyalaya, Raipur, Chhattisgarh, India - *Generation of Groundwater Prospect Zones for Selection of Prospective Suitable Water Harvesting Structure Sites for Sustainable Water Supply Towards the Agricultural Development : A Case Study of Kharun Watershed, Chhattisgarh, India* (GWS-0203)



Shalander Kumar, International Crops Research Institute for the Semi-Arid Tropics, Hyderabad, India - *Potential of Farm Level Rainwater Harvesting for Enhancing Resilience of Dryland Farming Systems in India* (GWS-0221)

Anil Kumar Mishra, Water Technology Center, Indian Agricultural Research Institute, New Delhi, India - *Weighted Spatial Probability Modeling (WSPM) Approach to Identify Potential Sites for Rain Water Harvesting Systems (RWHS) on Watersheds* (GWS-0236)

Jeffrey Bareng, Isabela State University, Echague, Isabela, Philippines - *Technical and Institutional Options of Water Harvesting Systems for Increased Productivity and Climate Change Adaptation in Agriculture* (GWS-0051)

Ahamada Zziwa, Makerere University, Kampala, Uganda - *In-Situ Rainwater Harvesting Practices and Technologies for Improving the Adaptive Capacity of Farmers to Climate Change in Resource-Constrained African Communities: A Case Study of Rakia District in Uganda* (GWS-0030)

12:30-2:00 PM

Session Co-Chairs:

Rapporteur:

Location:

Speakers:

Lunch with Keynote Speakers

S.G. Bajwa, North Dakota State University, Fargo, North Dakota, USA

H.C. Sharma, GBPUAT, Pantnagar, Uttarakhand, India

Pradeep Singh Kashyap, GBPUAT, Pantnagar, Uttarakhand, India

Grand Ballroom

Stacy Hutchinson, Kansas State University, Manhattan, Kansas, USA- *Rethinking the Water Budget: Mapping and Monitoring Soil Moisture at the Regional Scale*

S.P. Aggarwal, Indian Institute of Remote Sensing, Indian Space Research Organization, Dehradun, Uttarakhand, India- *Earth Observation Applications for Water Security: An Indian Perspective* (GWS-0275)

2:00-3:30 PM

Location:

POSTER SESSION - Irrigation and Drainage-Modeling and Data Analysis

Gardenia Lawn

2:00-3:30 PM

Session Facilitators:

Location:

Panelists:

Farmers' Panel Discussion

Sreenath Dixit, International Crops Research Institute for Semi-Arid Tropics, Hyderabad, Telangana, India

P.V. Vara Prasad, Kansas State University, Manhattan, Kansas, USA

Srinivasulu Ale, Texas A&M AgriLife Research, Vernon, Texas, USA

Emerald I

Ronnie Hopper, Texas, USA

Sunny Bottoms, Arkansas, USA

Venkatesh Reddy, Karnataka, India

Balwant Reddy, Telangana, India

Pandurangaiah, Andhra Pradesh, India

Timothy Williams, IWMI, Accra, Ghana

P. Soman, Jain Irrigation Systems Limited, Maharashtra, India



- 2:00-6:00 PM Special Joint Session: Improving Agricultural Water Productivity in Dry Areas
(Hosted by ICARDA, ICRISAT, and IWMI)
- Session Co-Chair: Vinay Nangia, ICARDA, Rabat, Morocco
Alok Sikka, IWMI, New Delhi, India
- Rapporteur: Vijay Singh Rathore, CAZRI, Jodhpur, Rajasthan, India
- Location: Grand Ballroom
- Keynote Presentations:
- 2:00-2:20 PM Theib Oweis, ICARDA, Amman Jordan - *The Debate on Water Savings, Efficiency and Land vs. Water Productivity in Water Scarce Dry Regions* (GWS-0287)
- 2:20-2:40 PM Anthony Whitbread, ICRISAT, Hyderabad - *Water Productivity from Plant to Watershed: Sustainability and Productivity in the Semi-Arid under a Changing Climate* (GWS-0286)
- 2:40-2:50 PM Break
- Invited Presentations:
- 2:50-3:05 PM Vinay Nangia, ICARDA, Rabat Morocco - *Heat Units-Based Potential Yield Assessment for Cotton Production in Uzbekistan* (GWS-0285)
- 3:05-3:20 PM Narendra Dev Yadava, ICARDA, Rabat Morocco - *Yield and Water Productivity of Crops as Influenced by Irrigation and N Levels in Energy-Water Scarce Environment of Hot Arid Zone in India* (GWS-0284)
- 3:20-3:35 PM Subrata Singh, ICRISAT and NARES - *Water Commons: Influencing Practice and Policy* (GWS-0283)
- 3:35-3:50 PM Andre van Rooyen, ICRISAT, Bulawayo Zimbabwe - *Improving Water Productivity and Profitability in Small-Scale Communal Irrigation Schemes in Southern Africa* (GWS-0282)
- 3:50-4:05 PM Oytur Anarbekov, IWMI - *Financial/Economic Incentives to Support Water Savings and Water Productivity Improvements in Uzbekistan* (GWS-0292)
- 4:05-4:20 PM Alok Sikka, IWMI, New Delhi - *Water and Energy Smart Solutions for Building Resilience in Drylands of South Asia* (GWS-0276) - Invited
- Poster Presentations:
- 1 V.S. Rathore, ICARDA, Bikaner - *Enhancing Crop Water Productivity in Arid Western India* (GWS-0288)
 - 2 Ashutosh Sarker, ICARDA, New Delhi - *Rice-Fallow Rotation to Improve Water Productivity in Eastern India* (GWS-0289)
 - 3 Thomas Falk, ICRISAT, Telangana - *Agricultural Productivity and Water use Efficiency in Maharashtra, India* (GWS-0290)
 - 4 Ravula Padmaja, ICRISAT, Patancheru - *Gender- and Social- Inclusion Approach in Watershed Projects: Insights on Gender Norms and Gender Relations in Parasai-Sindh Watershed, India* (GWS-0291)



- 5 Oytüre Anarbekov, IWMI - *Use of Innovative Technologies for Improving Water Accounting and Financial Viability of Water Consumer Associations (GWS-0281)*
- 6 M.D.M. Kadiyala, IWMI, Hyderabad - *Increasing Water Productivity at Water User Group Level through On-farm Irrigation Scheduling Tools and Simulated Crop Water Requirements at Off-take Points (GWS-0280)*
- 7 Marloes Mul, IWMI, Accra Ghana - *Suitability for Solar PV Irrigation in West Africa – A Suitability Mapping Approach (GWS-0279)*

4:20-4:30 PM

Break

4:30-6:00 PM

Panel Discussion

Panelists:

Ashutosh Sarker, ICARDA
Theib Oweis, ICARDA
Birhanu Zemadim, ICRISAT
Amede, ICRISAT
Jennie Barron, IWMI
Alok Sikka, IWMI

3:30-4:00 PM

Break

Location:

Gardenia Lawn

4:00-5:30 PM

Concurrent Sessions on Irrigation & Drainage, Conservation, and Water Management for Sustainable Agricultural Growth

- Climate and Rainfall

Session Co-Chairs:

Keith Cherkauer, Purdue University, West Lafayette, Indiana, USA
Raghu Babu, ANGRAU, Guntur, Andhra Pradesh, India

Rapporteur:

Shakir Ali, IISWC, Kota, Rajasthan, India

Location:

Emerald I

Speakers:

Manoj Jain, Indian Institute of Technology, Roorkee, Uttarakhand, India –
Modified Soil Moisture Accounting Procedure for Long Term Hydrologic Simulation of Stream Flow Using SCS-CN Concept (GWS-0214)

Kulamulla Parambath Sudheer, Indian Institute of Technology Madras, Chennai, Tamil Nadu, India - *Assessing Impacts of Watershed Management Practices on Crop Productivity under Climate Change Scenarios (GWS-0124)*

Sujeet Desai, Central Coastal Agricultural Research Institute, Goa, India - *Calibration and Validation of SWAT Model to Assess the Hydrologic Response of Betwa River Basin (India) to Climate Change (GWS-0098)*

Nidhi Misra, National Remote Sensing Center, Hyderabad, Telangana, India - *Long Term Analysis of Visible Broad Band Albedo and Water Spread Area over Krishna Basin (GWS-0130)*



Aavudai Anandhi, Florida A&M University, Tallahassee, Florida, USA -
*Application of WR-VISTA - A Decision Support Tool for Modeling Vulnerability of
Water Resources: Case Study in Southeast Asia (GWS-0019)*

- Groundwater Resources

Session Co-Chairs: James Houser, Appalachian State University, Boone, North Carolina, USA
B.J. Pandian, WTC, TNAU, Coimbatore, Tamil Nadu, India

Rapporteur: Satish Lande, IARI, New Delhi, India

Location: Emerald II

Speakers: Dhirendra Singh, Water Technology Centre, Indian Agricultural Research
Institute, New Delhi, India - *Reducing CO₂ Emission from Groundwater Irrigation
through Improved Method of Cultivation (GWS-0162)*

Vaishali Sharda, Kansas State University, Manhattan, Kansas, USA - *Simulating
the Impacts of Irrigation Levels on Soybean Grown to Manage Diminishing
Groundwater Levels (GWS-0142)*

Saif Ali, Indraprastha Institute of Information Technology, New Delhi, India -
*Sustainable Groundwater Utilization amidst Agricultural Intensification? An
Assessment of Cropping Decisions and Groundwater Levels in the Indo-Gangetic
Plains (GWS-0066)*

Darrell W. Donahue, Michigan State University, East Lansing, Michigan, USA -
*Great Lakes Watershed Management System: Web-based Technology for
Estimating Field Scale Sediment, Nutrient, and Groundwater Changes from
Applied Conservation Practices (GWS-0048)*

Jyothirmayee Kandula, Watershed Organization Trust, Hyderabad, Telangana,
India - *Securing Farmer Livelihoods through Collectivisation of Groundwater
Usage: A Case Study from Ranga Reddy District, Telangana State (GWS-0062)*

- Innovation in Conservation Practices

Session Co-Chairs: Ramesh Teegavarapu, Florida Atlantic University, Boca Raton, Florida, USA
K. Sadasiva Rao, PJTSAU, Hyderabad

Rapporteur: Shweta Kumari, IIT, Hyderabad

Location: Sapphire

Speakers: Ashutosh Upadhyaya, Indian Council of Agricultural Research Complex for
Eastern Region, Patna, Bihar, India - *Conservation and Management
Technologies: Practices for Efficient Use of Water in Agriculture (GWS-0132)*

Gary L. Hawkins, University of Georgia, Athens, Georgia, USA - *Implementing
Regional Water Plans through Research and Education in Georgia, USA (GWS-
0084)*

Srinivasulu Ale, Texas A&M AgriLife Research, Vernon, Texas, USA - *Simulated
Strategies for Efficient Use of Irrigation Water for Cotton Production in the Texas
High Plains (GWS-0112)*



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Laurent Ahiablame, University of California, Davis, California, USA - *Recent Trends in Water Use in San Diego County: Balancing Agricultural and Urban Water Needs with Conservation Strategies* (GWS-0153)

Dharmendra Saraswat, Purdue University, West Lafayette, Indiana, USA - *Decision Support System for Globally Assessing Riparian Hotspots* (GWS-0180)

6:30 – 9:30 PM Gala Dinner and Cultural Program at Taramati Baradari
Transportation will be provided.



Saturday, October 6th

- 9:00-10:00 AM Keynote Addresses
Session Co-Chairs: Laurent Ahiablame, University of California, Davis, California, USA
 Vinay Pandey, IGKV, Raipur, Chattisgarh, India
Rapporteur: G. Manoj Kumar, PJTSAU, Hyderabad, Telangana, India
Location: Grand Ballroom
Speakers: Chandra S. Pathak, US Army Corps of Engineers, Washington DC, USA -
 Modernization in Water Management Decision Support System (GWS-0272)

 Anju Gaur, The World Bank, New Delhi, India – *Use of Disruptive Technology for*
 Effective Irrigation and Agricultural Development in India (GWS-0300)
- 10:00-11:00 AM Panel Discussion on Irrigation & Drainage, Conservation, and Water
 Management for Sustainable Agricultural Growth
Session Co-Chairs: Lalit Verma, University of Arkansas, Fayetteville, Arkansas, USA
 P.B.S. Sarma, National Academy of Agricultural Sciences. New Delhi, India
Rapporteur: Vinod Tripathi, BHU, Varanasi, Uttar Pradesh, India
Location: Grand Ballroom
 Kyle Proctor, Oregon State University, Corvallis, Oregon, USA - *FEW Nexus Tool*
 for Assessing Optimal Crops in Uncertain Climatic and Economic Conditions
 (GWS-0073)

 Michael Scobie, University of Southern Queensland, Toowoomba, Queensland,
 Australia - *Augmented Reality in Irrigation Scheduling (GWS-0105)*

 Ramesh Kanwar, Lovely Professional University, Jalandhar, Punjab, India –
 Water Management Strategies for Sustainable Agricultural Production Systems
 in Punjab (GWS-0304)

 Shiv O. Prasher, McGill University, Montreal, Québec, Canada – *Sustainable Crop*
 Production Using Biochar and Hydrogels

 Rachel Scarlett, Purdue University, West Lafayette, Indiana United States -
 Understanding the Effects of National Agricultural Policies on Water User
 Communities: Cases of India and South Africa (GWS-0270)
- 11:00-12:30 PM POSTER SESSION - Irrigation and Drainage-Field Studies
Location: Gardenia Lawn
- 12:30-2:00 PM Luncheon with Keynote Addresses
Session Co-Chairs: Ramesh Rudra, University of Guelph, Guelph, Ontario, Canada
 A Mani, ANGRAU, Bapatla, Andhra Pradesh, India

Rapporteur: Sarmistha Singh, Purdue University, West Lafayette, Indiana, USA
Location: Grand Ballroom



Speakers: V. Praveen Rao, Professor Jayashankar Telengana Agricultural University, Hyderabad, Telangana, India - *Telangana State Microirrigation Project: A Special Purpose Vehicle for Natural Resource Management & Enhancing Smallholders Incomes* (GWS-0274)

Chandra Madramootoo, McGill University, Montreal, Québec, Canada – *Bridging the Great Productivity Divide: Water and Crops* (GWS-0299)

2:00-3:30 PM Concurrent Sessions on Irrigation & Drainage, Conservation, and Water Management for Sustainable Agricultural Growth

- Irrigation, Drainage, and Water Conservation

Session Co-Chairs: Shiv O. Prasher, McGill University, Montreal, Québec, Canada

K.S. Reddy, CRIDA, Hyderabad, Telangana, India

Rapporteur: Garrett Pignotti, Purdue University, West Lafayette, Indiana, USA

Location: Emerald I

Speakers: Jitendra Kumar, ICAR, Vivekananda Parvatiya Krishi Anusandhan Sansathan Almora, Uttarakhand - *Design and Development of Indigenous Sensor Network based Irrigation System for Improving Water Productivity of Vegetable Crops under Different Irrigation Methods* (GWS-0157)

Dilip Haribhau Yewalekar, Jain Irrigation Systems Limited, Jalgaon, Maharashtra, India - *e-Automation System for Agri-Irrigation Project* (GWS-0116)

Keith Cherkauer, Purdue University, West Lafayette, Indiana, USA - *The Future of on Farm Water Management: A Case Study from Indiana* (GWS-0191)

Ramadhar Singh, Central Institute of Agricultural Engineering, Bhopal, Madhya Pradesh, India - *Feasibility Study of the Drainage Systems for Temporary Waterlogged Vertisols in Central India* (GWS-0172)

Bikalp Chamola, Vikasanvesh Foundation, Tata Trusts, Pune, Maharashtra, India - *Small Pumps Big Hopes: A Study to Explore the Role of Small Irrigation Pumps in Enhancing the Incomes of Small and Marginal Farmers in the Eastern States of India* (GWS-0014)

- Irrigation Methods

Session Co-Chairs: Kendall DeJonge, USDA-ARS, Fort Collins, Colorado, USA

Manoj Khanna, WTC, IARI, New Delhi, India

Rapporteur: Fameena, P.V., Purdue University, West Lafayette, Indiana, USA

Location: Emerald II

Speakers: Alan Schlegel, Kansas State University, Manhattan, Kansas, USA – *Limited Irrigation of Four No-Till Crop Rotations* (GWS-0087)

Joshua Wanyama, Makerere University, Kampala, Uganda - *Pathways to Improving Water Productivity in Smallholder Irrigated Agriculture in Uganda* (GWS-0194)



Rabindra Panda, Indian Institute of Water Management, Bhubaneswar, Orissa, India - *Impact Study of Irrigation Infrastructures on Crop Water Productivity in a Canal Command* (GWS-0219)

Vinod Kumar Tripathy, Banaras Hindu University, Varanasi, Uttar Pradesh, India - *Role of Flushing on Performance of Micro Irrigation System with Poor Quality Water* (GWS-0037)

P.V. Vara Prasad, Kansas State University, Manhattan, Kansas, USA - *Opportunities to Improve Water Productivity to Enhance Crop Yields and Resilience of Farming Systems in the Semi-Arid Tropics* (GWS-0152)

- Water Conservation

Session Co-Chairs: Cibin Raj, Penn State University, College Park, USA
Dhirendra Singh, WTC, IARI, New Delhi, India

Rapporteur: Anil Kumar Mishra, WTC, IARI, New Delhi, India
Location: Sapphire

Speakers: Prachi Sharma, International Commission on Irrigation and Drainage, New Delhi, India - *Water Accounting Framework for Agricultural Water Management* (GWS-0081)

Sahdev Singh, International Commission on Irrigation and Drainage, New Delhi, India - *Communication for Sustainable Agricultural Water* (GWS-0082)

Ashish Pandey, Indian Institute of Technology, Roorkee, Uttarakhand, India - *Performance Evaluation of Canal Irrigation System* (GWS-0035)

Dhananjay Nangare, National Institute of Abiotic Stress Management, Baramati, Maharashtra, India - *Effect of Deficit Irrigation and Bio-Regulator on Enzymatic Activities, Yield and Water Use Efficiency of Grape Grown in Different Soil Mixtures under Semi-Arid Region* (GWS-0237)

Rapolu, Mahendra Kumar; Indian Institute of Rice Research, Hyderabad, Telangana, India - *Potential of Water Saving Crop Establishment Methods and Technologies for Sustainable Productivity of Rice in India* (GWS-0158)

3:30-4:30 PM Facilitated Discussion & Meeting Conclusions by Session Chairs and Co-Chairs

Session Co-Chairs: Prasanta Kalita, University of Illinois, Urbana-Champaign, Illinois, USA
Gajendra Singh, IARI, New Delhi, India

Rapporteur: Devanand Maski, UAS, Raichur, Karnataka, India
Location: Grand Ballroom

4:30-5:30 PM Closing of Meeting by Conference Co-Chairs & Minister for Irrigation

Location: Grand Ballroom



Poster Session #1 – Thursday, October 4th

1. *A Calibration Free Dynamic Budyko Model and its Application to Predict Flow Duration Curve in Ungauged Basins of South India* - Anita Nag, IIT Hyderabad, Telangana India (GWS-0060)
2. *A Remote Sensing and GIS Approach to Analyze Agricultural Drought Duration Days and Trend in Marathawada, Maharashtra, India, Huddar, Mohammadsanaulla* - Huddar Mohammadsanaulla, Indian Institute of Remote Sensing (GWS-0246)
3. *A Sustainable Green Technology to Remove Chromium from Effluent of Electroplating and Tannery Industries*, Deepika Bhatia, School of Bioengineering and Biosciences, LPU, Phagwara, Punjab India (GWS-0117)
4. *Agricultural Expansion and Ethiopian Lake Ziway Sub-Basin Water Scarcity* - Mulugeta Musie, Indian Institute of Technology Roorkee (GWS-0212)
5. *An Economic Study of Groundwater Development and Use in Agriculture in Bihar* - Prabhat Kishor (GWS-0149)
6. *Assessment of Water Quality Effect on Acceptability of Sorghum-Based Beverage* - Alababan Babatope, Federal University, Oye Ekiti (Ikole Campus) Nigeria (GWS-0024)
7. *Comparative Analysis of Biochar Produced from Water Hyacinth and Rice Husk in Removing Cr (VI) from Aqueous Solution* - Deepika Bhatia, School of Bioengineering and Biosciences, LPU, Phagwara, Punjab India (GWS-0118)
8. *Comparative Studies on Low Cost Filter Media for Engineered Wetlands for Safe Disposal of Municipal Wastewater* - Prasad S. Kulkarni (GWS-0224)
9. *Continuous Flow Column Studies using Biochar for the Removal of Contaminants from Wastewater* - Deepika Bhatia, School of Bioengineering and Biosciences, LPU, Phagwara, Punjab India (GWS-0119)
10. *Coupled Surface and Ground Water Modelling - Comparison of the results with Finite Difference and Finite Element Modelling Approaches* - K Sangeetha (GWS-0233)
11. *Data-Driven Runoff Modelling of a Mid-Himalayan Watershed* - Pankaj Kumar, Govind Ballabh Pant University of Agriculture & Technology, Pantnagar, Uttarakhand (GWS-0252)
12. *Depleting Water Resources of Indian Punjab, Water Pollution through Human Interventions, Future Challenges and Mitigation* - Mahesh Chang Singh, Punjab Agricultural University (GWS-0099)
13. *Development and Performance of Device in Improving the Irrigation Water Quality* - Deepak Bornare, IIT Bombay (GWS-0016)
14. *Discharge Forecasting of a Watershed Using Wavelet Neural Networks* - K Srinivasa Raju (GWS-0053)
15. *Drought Frequency-Persistence-Spread-Area under Dryness using SPI over Karnataka, India – Pushpa Tuppad* (GWS-0071)
16. *Effect of Climate Change on Hydrological Components of Sind River Basin, India using SWAT Model* - Boini Narsimlu, IIT, Delhi, New Delhi (GWS-0251)
17. *Efficacy of Drip Laterals for Assessing the Microbial Quality of Vegetable Crops Irrigated with Primarily Treated Municipal Wastewater* - Deepak Singh, ICAR, Dehradun (GWS-0056)
18. *Efficient Removal of Titanium and Nickel from Wastewater Drain by using Rice Husk Biochar* - Deepika Bhatia, School of Bioengineering and Biosciences, LPU, Phagwara, Punjab India (GWS-0122)



19. *Estimation of Canal Roughness Coefficient and Conjunctive use Planning in DBM 23 of SRSP Command Area* - Lalitha Sarada, IIT Hyderabad (GWS-0168)
20. *Estimation of Stream Flow and Sediment Yield from Seonath Subbasin Using SWAT Model* - Mahendra Prasad Tripathi (GWS-0210)
21. *Free Electricity for Farmers a Critique* – Amarender Reddy, National Institute of Agricultural Extension Management (GWS-0139)
22. *Functions and Significance of Grasslands from Hydrological Perspective - An Indian Scenario* - Murari Lal Gaur, Department of Meteorology & Agricultural Engineering (GWS-0164)
23. *Global Water Security and Sustainable Management Strategies for Agriculture and Forest Production with Emphasis on Afro- Asian Vulnerable Settings* - Nareddy Narayana Reddy, ICAR, Hyderabad (GWS-0238)
24. *Greening of Sand Dunes of Rajasthan through Solar Energy Powered Micro Irrigation System* - Neelam Patel, Water Technology Centre, Indian Agricultural Research Institute, New Delhi (GWS-0185)
25. *Identifying implementation fault lines in Water Governance in India and Drawing Contrast of Water Policy Making in the European Union's Context* - Caleb Pradhan, Technical University of Hamburg, Hamburg Germany (GWS-0041)
26. *Impact of Changing Climate on Surface Flow and Nutrients in an Agricultural Dominated Tile Drained Watershed for Sustainable Water Resources* - Margaret W. Gitau, Purdue University, West Lafayette, Indiana United States (GWS-0150)
27. *Impacts of Climate Change on Hydrological Fluxes and Land Surface Variables for Subarnarekha Basin of Eastern India* - Srishti Gaur, IIT Kharagpur, West Bengal India (GWS-0023)
28. *Innovative On-Site Desalination and Reuse Technology Research and Demonstration at TAMU RELLIS Campus* - Anish Jantrania, Texas A&M AgriLife (GWS-0028)
29. *Investigating Strategies for Safe Reuse of Treated Textile Wastewater for Irrigation: A Comprehensive Study, Beegum, Sahila* - K P Sudheer, Indian Institute of Technology Madras, Chennai (GWS-0114)
30. *Investigation of Spatial and Temporal Variation of Droughts: A Case Study of Manjira Basin, India* - Akbari, Shagufta - Shagufta Akbari, IIT, Bombay, Mumbai (GWS-0085)
31. *Irrigation Opportunities with Wastewater Use in India* - Alka Palrecha, Centre Environmental Planning and Technology (GWS-0176)
32. *Low Cost Treatment of Wastewater for Agricultural use in India* - Deepika Bhatia, School of Bioengineering and Biosciences, LPU, Phagwara, Punjab India (GWS-0047)
33. *Mapping Spatial and Temporal Agricultural Water Availability and Productivity Influenced by Precipitation and Temperature Extremes: Impacts of Climate Variability and Change in India* - Ramesh Teegavarapu, Florida Atlantic University, United States (GWS-0072)
34. *Mitigating Agricultural Water Scarcity in Data-Scarce Regions by Developing a Calibration-Free Hydrological Model* - Basudev Biswal, IIT Bombay (GWS-0068)
35. *Optimum Allocation of Surface and Ground Water Resources of Appapuram Channel Command in Krishna Western Delta* - Kelothu Kishan, College of Agricultural Engineering (GWS-0155)
36. *Physio-Climatic Controls on the Vulnerability of Water Availability in the Stream due to Climate and Land use Change* – Ankit Deshmukh (GWS-0076)



37. *Reduction of Iron and Manganese Content in Borehole Water using Corncob* – Richard Mbabazi (GWS-0146)
38. *Regional Scale Cropping Systems Management options in Rainfed Agro-ecosystem of South Central India* - Monoranjan Kumar, ICAR (GWS-0229)
39. *Removal of Contaminants from Wastewater by Biochar and Reuse for Agricultural Purposes* - Deepika Bhatia, School of Bioengineering and Biosciences, LPU, Phagwara, Punjab India (GWS-0121)
40. *River Basin Planning in Karnataka, India using IWRM Principles for Water Security*, Mohan R Zade (GWS-0167)
41. *Role of Vadose Zone for Efficient Agricultural Water Management* - Smaranika Mahapatra (GWS-0101)
42. *Spatial Connections in Rainfall at Seasonal Scale: Application of Complex Network Theory* - Sudhindra Nath Panda, National Institute of Technical Teachers Training and Research, Chennai (GWS-0135)
43. *Spatio Temporal Analysis of Drought for Latur District of Maharashtra using SPI* - P.V. Aswathi (GWS-0249)
44. *Studies on Development of Engineered Wetlands System for Municipal Wastewater Treatment and Irrigational Reuse* - Prasad S Kulkarni, Dept. of Irrigation and Drainage Engg., University of Agricultural Sciences, Raichur (GWS-0222)
45. *Surface Modification of Biochar for Efficient Removal of Cadmium from Aqueous Solution* - Deepika Bhatia, School of Bioengineering and Biosciences, LPU, Phagwara, Punjab India (GWS-0120)
46. *Technological Perspectives for Farm Scale Water Management- Case Study for Selected Regions in India* - Suranjan Panigrahi (GWS-0061)
47. *Toward an Integrative Framework for a Resilient Food-Water-Energy System in the Fields-to-Cities Continuum in India* - Francisco Munoz-Arriola, Department of Biological Systems Engineering, University of Nebraska-Lincoln, Lincoln, Nebraska United States (GWS-0156)
48. *Using Low Impact Development (LID) Techniques for Agricultural Water Management in Peri-Urban Areas* - Bakkiyalakshmi Palanisamy, IIT Madras (GWS-0059)
49. *Water Resources Modeling in East Africa: Access and Suitability of Rainfall Data* - Margaret W. Gitau, Purdue University, West Lafayette, Indiana United States (GWS-0095)
50. *Water Reuse and Recovery from the Energy Sector* - Stacy Hutchinson, Kansas State University, Manhattan, Kansas United States (GWS-0050)
51. *Evaluating Climate Change Impacts on Himalayan Water Resources and Associated Ecosystem Services* – Rebecca Muenich, Arizona State University, Tempe, Arizona United States (GWS-0145)
52. *Spatiotemporal Soil Moisture Trends within the U.S. Great Plains from 1987-2016 and Implications for the Food-Energy-Water Nexus* – Kelsey McDonough, Kansas State University, Manhattan, Kansas United States (GWS-0064)



Poster Session #2 – Friday, October 5th

1. *A Climate Smart Technology for Vegetable Transplanting of Plug Seedlings* - Abhijit Khadatkar, ICAR-Central Institute of Agricultural Engineering, Bhopal, India (GWS-0015)
2. *A Remote Sensing and GIS Approach to get the Sensitivity of Drought: Case Study Bundelkhand, India* - Sunni Kanta Prasad Kushwaha, India (GWS-0250)
3. *A Satellite-Basesd Actual Evapotranspiration Estimation over Northwestern India* - Sangeetharani Rani (GWS-0215)
4. *A Study on Crop-Wise and Source-Wise Gross Irrigated Area of India* - Chiranjeev Pant, College of Technology, G.B.P.U.A&T, Pantngar, India (GWS-0067)
5. *Applicability of SWAT in Data Scarce Regions* - Jayaprathiga Mahalingam, Indian Institute of Technology Madras, India (GWS-0127)
6. *Assessment of Soil Erosion using RUSLE in Uttarakhand* - Manish Kumar Dhasmana, Indian Institute of Remote Sensing, ISRO, Dehradun, India (GWS-0232)
7. *Assessing Land Use and Land Cover Changes in the Murchison Bay Catchment of Lake Victoria Basin in Uganda* - Isa Kabenge, Makerere University, Kampala, Uganda (GWS-0033)
8. *Assessing Tile Drainage Impact on Water Budget and Sediment Yield in an Agricultural Watershed using SWATDRAIN* - Golmar Golmohammadi, Canada (GWS-0260)
9. *Assessment of Irrigation Water using GIS: A Case Study of Bundelkhand Region of India* - Prem Chand, ICAR-National Institute of Agricultural Economics and Policy Research, India (GWS-0228)
10. *Assessment of Okra Transpiration and Soil Evaporation under Subsurface Drip with Plastic Mulch using SIMDualKc Model* - Prem Chand, ICAR-National Institute of Agricultural Economics and Policy Research, India (GWS-0106)
11. *Assessment of Water Supply-Demand using Water Evaluation and Planning (WEAP) Model for Agricultural Watershed, India* - Ajai Singh, Associate Professor, Centre for Water Engineering and Management, Central University of Jharkhand, Ranchi, India (GWS-0012)
12. *Climate Resilient Agriculture thru Integrated Watershed Management* - Suhas Wani, ICRISAT Development Center, India (GWS-0257)
13. *Deficit-Irrigation along with Crop Residue Mulch, Vesicular Arbuscular Mycorrhizal and KNO₃ Application Improves Water Productivity of Late Sown Wheat* - Anchal Dass, Principal Scientist, Division of Agronomy, ICAR-Indian Agricultural Research Institute, New Delhi, India (GWS-0202)
14. *Design and Development of Automatic Irrigation System for Rice* - Mukesh Kumar, ICAR-Central Institute of Agricultural Engineering, Bhopal, India (GWS-0063)
15. *Development of Digital Water Measuring Device for Open Field Channel* - Amit Kumar, India (GWS-0261)
16. *Effects of Land Use on Water Quality in the Wabash Watershed* - Johann Vera, Purdue University, West Lafayette, Indiana United States (GWS-0086)
17. *Enhancing Water Use Efficiency using Precision Farm Machines* - Indra Mani, Head, Division of Agricultural Engineering, ICAR, India (GWS-0243)
18. *Environmentally and Economically Sustainable Agricultural Development: Exploring Regional Animal Agriculture Potential* – Raj Cibin (GWS-0200)
19. *Estimation of Evaporative Fraction for Irrigation Water Management in Canal Command using Remote Sensing* - N. K. Gontia, India (GWS-0171)
20. *Evaluating ORYZA2000 Model for Dry-Seeded Rice Responses to Planting Time, Cultivar and Irrigation Regimes in a Sub-Tropical Environment* - Shahida Nisar, India (GWS-0163)



21. *Evaluating Soil Water Dynamics in Watershed-Scale, Ecohydrologic Modeling in Mixed Land-Use Basins* - Garrett Pignotti, Purdue University, West Lafayette, Indiana United States (GWS-0265)
22. *Generation of High Resolution Topographic Data using Structure-from-Motion and Multi-View Stereo Photogrammetry* - Vijay Kisan Mali, Indian Institute of Technology Madras, India (GWS-0186)
23. *Identification of Triggering Point in Continuous Simulation Hydrological Models to Facilitate Dynamically Varying Parameters: Preliminary Investigations* - Lakshmi G, Indian Institute of Technology, Madras, India (GWS-0129)
24. *Increasing Water Productivity of Wheat through Tentiometer Based Irrigation Scheduling* - Prem Kumar Sundaram, ICAR-Research Complex for Eastern Region, Patna, Bihar, India (GWS-0241)
25. *Inter-Model Comparison of Flux Footprint Models in Homogeneous Fragmented Cropland Systems* - Shweta Kumari, Ph.D. Research Scholar, IIT Hyderabad, India (GWS-0173)
26. *Modelling Hydrology and Water Quality in the Upper and Middle Ganga River Basin using SWAT* - Manish Kumar Dhasmana, Indian Institute of Remote Sensing, ISRO, Dehradun, India (GWS-0247)
27. *Modelling of Flood Management in Catchment Area of Kolleru Lake, Andhra Pradesh* - Adusumilli Mani, India (GWS-0178)
28. *Modelling of Water Table Fluctuation between Drains when Initial Water Table Profile is Parabola* - Ram Mandir Singh, Professor, Department of Farm Engineering, Institute of Agricultural Sciences, Banaras Hindu University, Varanasi, UP, India, India (GWS-0058)
29. *Modernization Strategy for Irrigation Management, MASSCOTE Application to Tungabhadra Left Bank Canal, Karnataka, India* - TN Reddy, India (GWS-0165)
30. *Modification of SWDC Model for Optimization of Discharge and Irrigation Efficiency for Closed-End Border Irrigation* - Aliva Nanda, India (GWS-0131)
31. *Predicting On-Farm Water Harvesting and Management for Rainfed Crops in Sub-tropical Regions, Pandey, Pramod* - Pramod Pandey, University of California Davis, United States (GWS-0206)
32. *Prediction of Reference Evapotranspiration under Greenhouse using Artificial Neural Network (ANN)* - Vikas Kumar Singh, Birsa Agricultural University, Ranchi, Jharkhand, India (GWS-0055)
33. *Process-Based Solute Transport Model to Improve In-Stream Nutrient Uptake Prediction* - Femeena Pandara Valappil, Purdue University, West Lafayette, Indiana United States (GWS-0096)
34. *Reservoir Capacity Estimation using Remote Sensing* - Manish Kumar Dhasmana, Indian Institute of Remote Sensing, ISRO, Dehradun, India (GWS-0231)
35. *River Basin Modeling of Tungabhadra Sub-Basin, Karnataka, India using Source* - Pundarika Rao Dhanukonda, India (GWS-0115)
36. *Seeder with Aqueous Fertilizer Application System: A Viable Option for Crop Cultivation in Dryland Areas* - Satish Lande, India (GWS-0239)
37. *Simulating the Impact of Land Cover Changes on Sediment Transport using SWAT Model: A Case of Katosi Catchment, Uganda* - Isa Kabenge, Makerere University, Department of Agricultural and Bio, Uganda (GWS-0147)
38. *Simulation of Hydrus-1D Model for Water Flow and Potassium Transport through Paddy Soil under Alternate Wetting and Drying Irrigation Practice* - Shashank Shekhar, India (GWS-0054)



39. *Simulation of Water Use Efficient Irrigation Strategies and Climate Change Adaptation Scenarios for Grain Sorghum Production in the Texas High Plains* - Kritika Kothari, United States (GWS-0267)
40. *Soil Erosion Risk Modeling and Water Loss Assessment of Augustmuni Watershed of Uttarakhand State using Geospatial Techniques for Sustainable Management of its Natural Resources* - Saurabh Purohit, India (GWS-0227)
41. *Streamflow and Ecological Flow Variation Analysis for the Roanoke River in South-Eastern United States* - Rahul Kumar Singh, IIT Roorkee, India (GWS-0220)
42. *Trend Analysis of Groundwater Table Fluctuation for Selected Regions of Dehradun, Uttarakhand* - Chiranjeev Pant, India (GWS-0043)
43. *Trend in Rainfall and Rainy Days at Sindewahi Station in Chandrapur District of Maharashtra* - Rahul Beldar, Iran (GWS-0182)
44. *VAC Systems Farm Design using (D.E.M.) for the Orinoquia Region in Colombia* - Gonzalo Forero, Columbia (GWS-0007)
45. *Evaluation of Water Resources Vulnerability in Subarnarekha River Basin using WEAP Model* - Randhir Kumar, India (GWS-0189)



Poster Session #3 – Saturday, October 6th

1. *A Critical Introspection into the Kinematic Wave Theory* - Muthiah Perumal, Department of Hydrology, IIT Roorkee, Roorkee, India (GWS-0196)
2. *Actual Evapotranspiration Estimation using Modified SEBAL Model based on the Trapezoidal Relationship between Land Surface Temperature and Vegetation Index* - K Krupavathi, India (GWS-0230)
3. *Agricultural Machinery/Devices for Efficient Use of Water in the Field* - Manjeet Singh, Punjab Agricultural University Ludhiana, India (GWS-0092)
4. *Analysis Of Groundwater Quality In Oke- Oyi Irrigation Scheme Of Kwara State, Nigeria Using GIS* - Dr. Modupe Adejumobi, Nigeria (GWS-0110)
5. *Application of ICT to Improve Water use Efficiency* - Ankita Kadam, India (GWS-0128)
6. *Application of Social and Feed Back Nudges in Water Conservation using Crop Water Assessment Device (CWAD) in Farmer's Field Condition* - Ravichandran Kannan, Tamilnadu Agricultural University, India (GWS-0148)
7. *Assessing the Effect of Mulch and Drip Irrigation on Water use Efficiency and Crop Growth Model Performance* - Rasika Burghate (GWS-0190)
8. *Assessment of Climate Change Impact on Maize (Zea mays L.) in Semi-Arid Alfisol of Southern Telangana* - Umesh Barikar, ICAR-Krishi Vigyan Kendra, UAS Raichur, India (GWS-0255)
9. *Assessment of Coffee Husks Biochar for Enhancement of Soil Water Holding Capacity* - Nicholas Kiggundu, Makerere University, Kampala, Uganda (GWS-0039)
10. *Assessment of Soil Moisture Adequacy for Rainfed Crops under Semi-Arid Agro-Climatic Conditions: A Case Study* - U Satishkumar, India (GWS-0259)
11. *Biometric and Yield Response of Guava to Different Levels of Fertigation and Black Plastic Mulch* - Santosh DT, India (GWS-0169)
12. *Cost Analysis of Irrigated Bitter Gourd Production* - Mahendra Kale, India (GWS-0159)
13. *Delineation of Groundwater Recharge Potential Zones and Impact of Recharge Structures in Hard Rock Areas of Odisha, India* - Ranu Rani Sethi, India (GWS-0218)
14. *Development of Irrigation Scheduling in Maize-Wheat Cropping System using Soil Moisture Sensors* - Neelam Patel, Water Technology Centre, Indian Agricultural Research Institute, New Delhi (GWS-0184)
15. *Drainage Investigations and Design of Water Table Management Systems at Gopichettipalem, Erode District, Tamil Nadu* - Dr H V Hema Kumar, Aharya N.G. Ranga Agricultural University, India (GWS-0234)
16. *Effect of Different Irrigation Techniques on Food Production* - Ashok Kumar, India (GWS-0192)
17. *Effect of Different Level of Fertilizer on Growth and Yield of Okra* - Amol Shelke, India (GWS-0160)
18. *Effect of Postharvest Losses & Food Waste on Land, Water & Non-Renewable Resources* - Satish Kumar, Bihar Agricultural University, Sabour, Bhagalpur, India (GWS-0134)
19. *Effect of Urea Doped Hydroxyapatite Nanofertilizer on Nutrients Movement and Rice Growth* - Chwadaka Pohshna, India (GWS-0057)
20. *Evaluating the Response of Nakati (Solanumaethiopicum) Yield to Grey Water* - Isa Kabenge, Makerere University, Kampala, Uganda (GWS-0040)
21. *Evaluation of Microbial Inoculants for Alleviation of Water Stress in Field Crops* - Sudipta Das, India (GWS-0244)



22. *Evapotranspiration Estimation in Mid-Himalayan Region of India* - P.S. Kashyap, G.B. Pant University, Pantnagar, Uttarakhand, India (GWS-0256)
23. *Functionality and Management of Irrigation Systems in the Dangs, Gujarat* - Alka Palrecha, Centre for Environmental Planning and Technology, India (GWS-0175)
24. *Harvesting of Flood Water for Food Security in Context of Global Warming and Climate Change* - Abdullatif Khan, India (GWS-0223)
25. *Hiring Irrigation Services – A Sustainable Approach* - Gowri Sankara Rao Reddy, India (GWS-0177)
26. *Identification of Spatial Erosion Probe Area of a Catchment* - Birendra Bharti, India (GWS-0042)
27. *Impact of Disposal of Wastes from Detergent Industry on Receiving Stream and Groundwater*, Babatope Alabadan, Federal University, Oye Ekiti (Ikole Campus) Nigeria (GWS-0025)
28. *Impact of Micro-irrigation on Water Use Efficiency, Productivity and Profitability of Farms of Rajasthan (India)* - Pramod Kumar, India (GWS-0113)
29. *Investigation of Solar PV Powered Submersible Pump Performance for Managing Micro Irrigation System under Varying Climatic Conditions* - Mahesh Vinayak Hadole, Indian Institute of Technology, Kharagpur, India (GWS-0107)
30. *Irrigation Water use Efficiency and Water Productivity of Sugarcane Commercial Hybrids under Water Limited Situations* - Arjun Tayade (GWS-0264)
31. *Is Canal Irrigation System losing importance in Northern India: An Analysis of UP and Haryana* - Subhash Chand, ICAR-National Institute of Agricultural Economics and Policy Research, New Delhi, India (GWS-0104)
32. *Large Scale Greening of India due to Agricultural Nutrient Loading* - Swagat Patnaik, Indian Institute of Technology Hyderabad, India (GWS-0052)
33. *Limited Irrigation Water Management Research in Colorado, USA*, - Kendall DeJonge (GWS-0111)
34. *Merits of Polythene Lined On-farm Ponds over the Unlined Ones with respect to Harvesting and Reuse of Rainwater in Rainfed Agriculture* - Bharat Chandra Sahoo, College of Agricultural Engineering and Technology, Orissa University of Agriculture and Technology, Bhubaneswar, Odisha, India, India (GWS-0195)
35. *Morphometric Characterisation of a Watershed of Uttarakhand for Surface Water Resources Development Planning* – Harish Chandra Sharma (GWS-0027)
36. *On-Farm Water Resource Development using Plastic lined Water Harvesting Tank* - RK Singh, ICAR Central Institute of Post, India (GWS-0065)
37. *Optimized Farming System Response to Water Yield, Sediment and Carbon Sequestration in North-Eastern Himalayan Watershed of India* - V A Blessy (GWS-0209)
38. *Optimizing Smallholder Led Irrigation in the Semi-Humid Ethiopian Highlands* - Tammo Steenhuis, Cornell University and the University of Bahir Dar, Ethiopia (GWS-0046)
39. *Optimum Sizing of Recharge Filter for Artificial Recharging of Dug Wells* - Dr. Shakir Ali, ICAR-Indian Institute of Soil and Water Conservation (IISWC), Research Centre, Dadwara, Kota, India (GWS-0181)
40. *Pathways to Improving Water Productivity in Smallholder Irrigated Agriculture in Uganda* - Joshua Wanyama, Department of Agricultural and Biosystems Engineering Makerere University, Uganda (GWS-0034)



41. *Performance Evaluation of the Commamuru Canal Irrigation System in Krishna Western Delta of Andhra Pradesh* - Ravi Babu Gourabathuni, India (GWS-0138)
42. *Physicochemical Parameters of Wastewater Drain of Punjab, India* - Deepika Bhatia, School of Bioengineering and Biosciences, LPU, Phagwara, Punjab India (GWS-0123)
43. *Physiological Efficiency of Sugarcane Clones under Water Limited Conditions* - Arun Kumar R, ICAR-SBI, Coimbatre, Tamil Nadu, India (GWS-0263)
44. *Response of Summer Groundnut (*Arachis hypogaea* L.) to Micro-irrigation and Water Stress* - R K Mathukia, Junagadh Agricultural University, India (GWS-0020)
45. *Soil and Water Conservation Planning in Hirehalla Sub-Watershed of Karnataka* - Parameshgouda Patil, Sujala-III Projec, University of Agricultural Sciences, Dharwad, Karnataka, India (GWS-0094)
46. *Soil Moisture Dynamics and Commercial Sugarcane Hybrids Yield as Influenced by Different Irrigation Regimes under Tropical Indian Condition* - S Anusha, India (GWS-0262)
47. *Strategies for Application of Water Saving Techniques in Irrigation for Sustainable Productivity* – Manoj Khanna, Water Technology Center, New Delhi India(GWS-0077)
48. *Water Production Functions, Yields and Quality of Major Cereals and Vegetables Affected by Foliar Application of Plant Bio-Regulators and Water Stress Regimes in Deccan Plateau of India* - Goraksha Wakchaure, Scientist SSASPE, ICAR, India (GWS-0205)
49. *Water Productivity Assessment for Improved Irrigation Performance and Water Security in the Asia-Pacific Region: Karnataka, India* - Somasekhar Rao Poliseti, India (GWS-0166)
50. *Water Resource Development in India with Special Reference to Bihar-Some Issues* - Kumar Praveen, Civil Engineering Department, NIT Patna, India (GWS-0090)
51. *Watershed Based Characterization, Assessment and Efficient Management of Water Resources in Mewat Region of India* Susama Sudhishri, India (GWS-0226)
52. *Yield, Profitability and Water Use Efficiency Enhancement through Drip Irrigation and Fertigation in Cumin (*Cuminum cyminum* L.)* - Dr. P.J. Gohil, India (GWS-0074)
53. *Simulation of the Effect of Sowing Dates on a Yearlong Production of Forage and Bioenergy Sorghum* – Juan Enciso, Texas A&M AgriLife Research Center, Weslaco, Texas United States (GWS-0296)