

BIODATA



Name Dr. Asha Joseph
Address Professor (Soil and Water Engineering), Dept of IDE
Kelappaji College of Agricultural Engineering and Technology
Tavanur (P.O) Malappuram (Dt), Kerala – 679 573
Ph:9446575765
e-mail : asha.joseph@kau.in.

Educational Qualification

Degree	Year of Passing	University
Ph. D (Soil & Water Engg.)	2015	Tamil Nadu Agricultural University
M.E (Water Management.)	1992	Kerala Agricultural University
B Tech (Agrl. Engg.)	1990	Kerala Agricultural University

Professional Experience

Asst Prof (Provl) at KCAET, Tavanur, KAU from August 1993 to October 1994.
Asst Prof (Regular) at RARS, Kumarakom, KAU from 29.10.1994 to 10.06.2002.
Asst Prof at KCAET, Tavanur, KAU from 11.06. 2002 to 28.10. 2008.
Associate Professor at KCAET, Tavanur, KAU from 29.10. 2008 to 14.03.2015.
Professor at KCAET, Tavanur, KAU from 15.03-2015 to till date.

Teaching Credentials

- Courses handled for B Tech (Agrl. Engg.):** Building Technology and farm structures, Tube wells and pumps, Command area development and on-farm irrigation, Drainage engineering, Hydrology, Soil and Water Conservation Engineering, Irrigation Equipment Design, Fluid mechanics and open channel hydraulics, Ground water wells and pumps, Seminar, Skill Development Training-I (Student READY), B Tech Project, In-plant training

2. **Courses handled for M Tech:** Farm drainage system design, Design of farm irrigation system, Agricultural drainage systems, Masters seminar, Design of drip and sprinkler irrigation system, Dimensional analysis and similitude, Masters research.
3. **Courses handled for PhD:** Soil Erosion process modeling, Advanced irrigation engineering, Advanced drainage engineering, Doctoral seminar, Doctoral research

Research Credentials

Major areas of research

1. Planning water conservation measures in a watershed using GIS and SWAT
2. Water management for canal irrigated command using geospatial tools
3. IoT based microclimate monitoring and controlling system for polyhouse
4. Microcontroller based automatic plant watering system
5. Ground water level prediction and drought assessment using GIS and ANN
6. Drip and sprinkler systems
7. Assessment of evapotranspiration models for humid tropical regions
7. Flood modelling using HEC-HMS
8. Wetland mapping, inventory and change detection

B Tech Projects guided -15 No

1. Assessment of ground water resources, KCAET campus.
2. Hydraulics and field evaluation of subsurface inline drip irrigation system.
3. Estimation of irrigation water requirement using GIS.
4. Design, development and evaluation of a sullage treatment system.
5. Alternatives to plastic mulch under micro-sprinkler irrigation.
6. Effect of soilless culture and drip irrigation management.
7. Bio- engineering measure for soil erosion control.
8. Feasibility studies on green roof for temperature and runoff management.
9. Soil reinforcement using coconut fiber.
10. Crop coefficient values of okra for the humid tropical region using lysimeter.
11. Crop water requirement and irrigation scheduling of selected crops in Pattambi region using CROPWAT
12. Development of a microcontroller based automatic plant watering system
13. Artificial neural network model (ANN) for groundwater level prediction
14. Development and evaluation of an alternate media filter for drip irrigation system

15. Mapping of water supply and distribution network of KCAET campus using total station and GIS

M Tech thesis guided-9 No

1. Subsurface drip irrigation for ladies' finger in sandy loam soil.
2. Hydraulics and field performance of a farmer developed novel micro sprinkler.
3. Assessment of evapotranspiration models for humid tropical region.
4. Water availability and climatic water balance for a selected cropped area.
5. Water conservation measures and cropping pattern for a watershed using geospatial techniques and SWAT modelling
6. Flood frequency analysis and modelling of flood using HEC-HMS for a sub-basin of Meenachil
7. Mapping, inventorying and change detection of wetlands of Thavanur Grama Panchayath
8. An IoT based real time climate monitoring and controlling system for green house
9. Spatio-temporal groundwater drought assessment based on ANN model and GIS for a subbasin of Bharathapuzha

PhD thesis completed and ongoing

1. Irrigation Planning and Management of a Canal Irrigated Command using Geo-spatial Techniques (completed).
2. Groundwater assessment and water resources development for Chittoor block of Palghat district in Gayathri subbasin of Bharathapuzha (ongoing)
3. Prediction of stream flow and sediment yield prediction using Machine Learning and SWAT model for watershed prioritization and conservation management (ongoing)

Publications

Published 15 research articles in peer reviewed journals, 7 research articles in conference proceedings, 3 book chapters and 2 popular articles

Publications during last 10 years

Farsana, F., Varughese, A., and **Asha, J.**, A. 2023. Soil erosion estimation of Kunthippuzha watershed using GIS and RULSE model. International Journal of Environment and Climate Change.13(10): 2956-2967.

Aiswarya, L., Rema, K. P and **Asha, J.** 2023. Performance of qualitative and quantitative modes in creating landslide susceptibility map of Chaliyar river basin. International Journal of Environment and Climate Change.13(10):1860-1875.

- Assainar, K.K.R., **Asha, J.**, and Sajeena, S.2023. Trend analysis of groundwater levels in Kkalpathypuzha sub-basin of Bharathapuzha, Kerala, India. *International Journal of Environment and Climate Change*.13(9): 1145- 1157
- Nair, G. P. and **Asha, J.** 2023. Creation of Geospatial Database and Estimation of Irrigation Water Requirement of a Canal Command in Gayathri Irrigation Project, Kerala. *International Journal of Environment and Climate Change*.13 (8): 182-196
- Harisankar, O.P., Joseph, S., Sathian, K.K., **Asha, J.**, Jayan, P.R. Techno economic assessment of axial flow pumps in Thrissur Kole lands. *Current Journal of Applied science and Technology*. 42 (5): 19-28.
- Gilsha Bai, E.B., Rema, K. P., **Asha, J.** and Sathian, K. K. 2023. Water Delivery Performance of Canal Irrigation: A Case Study of Chalakudy River Diversion Scheme. *Journal of Agricultural Engineering (India)* 60 (1): 74-85
- Gilsha Bai, E.B., Rema, K.P., **Asha, J.**, Abraham, M. and Varughese, A. 2022. CROPWAT and GIS tools for AEU based irrigation demand estimation of the Chalakudy River Diversion Scheme (CRDS) command area. *Journal of Tropical Agriculture* 60(2): 255-263
- George, R., **Asha, J.** and Rema, K.P. 2022. Application of Hydrologic Engineering Centers Hydrologic Modeling System (HEC-HMS) Model for modelling flood in sub basin of Meenachil River, Kerala, India. *Int.J. Environment and Climate Change* 12(12):1251-1262.
- Chithra, M.R., **Joseph, Asha, J.**, Mithra, S.J. and Varughese, A. 2022. Mapping, inventory and change detection of wetlands of Thavanur Grama Panchayath using multispectral satellite imagery. *Int.J. Environment and Climate Change* 12(11):33-50
- George, R. and **Asha, J.**, 2020. Flood frequency analysis of a sub-watershed in Meenachil river basin using Gumbels extreme value distribution. *Int.J.Curr. Microbiol. App.Sci.* 9(6): 3746-3752.
- Balan, P and, **Asha, J.** 2021. Modeling the crop water requirement and irrigation scheduling of banana using CROPWAT 8 model: a case study of Manali watershed, Thrissur, Kerala. *Int. J. of Farm Sci.* 11(3): 1-9. Doi: <http://dx.doi.org/10.5958/2250-0499.2021.00024.0> (got the best paper award of that journal)
- Sai, V. K and **Asha, J.** 2018.Trend analysis of Rainfall of Pattambi Region, Kerala,India. *Int.J.Curr.Microbiol. App.Sci.*7 (9): 3274-3281.
- Asha, J.** and Tamilmani, D. 2017. Markov Chain model of weekly rainfall probability and dry and wet spells for agricultural planning in Coimbatore of Western Zone of Tamil Nadu. *Indian J. of Soil cons.*45 (1): 66-71.
- Asha, J.** and Muthuchamy, I. 2015. Effect of alternative growing system and media on the vegetative growth & yield of tomato in aggregate hydroponics. *Green farming Int.J.* 6 (1): 103-107.
- Asha, J.** and Muthuchamy, I. 2014. Productivity, quality and economics of tomato (*Lycopersicon esculentum* Mill.) cultivation in aggregate hydroponics- a case study from Coimbatore region of Tamil Nadu. *Indian Journal of Science and Technology.* 7(8): 1078-1086.

External Aided Projects (EAP's) Handled

1. **PI** of “Effect of silt-pits and moisture Conservants in Rubber plantation” (Funded by NWDPR).
2. Member in the panel experts for the verification of the database of the project “Development of digital information database on agricultural implements” under the scheme “Development of innovative farm mechanization packages for Kerala” (Funded by Govt. of Kerala)
3. **PI** of “Evaluation and standardization of a farmer developed micro-sprinkler” (Funded by KSCSTE).
4. **Co-PI** of state plan project on “Studies on augmenting vegetable production by poly house cultivation using water and energy efficient eco-friendly technologies” (funded by State Planning Board, Govt. of Kerala).
5. Co-PI of annual state plan project 2021-22-Station wise funding-Strengthening and modernizing the hydraulics Lab” at KCAET, Tavanur

Other Academic and Infrastructure Development Activities

1. Improved the facilities of irrigation lab and hydraulics lab of KCAET by procuring equipment's for water management and fluid flow studies.
2. Strengthened the irrigation lab by purchasing instruments for monitoring climatic parameters in crop studies.
3. Established an improved drinking water supply system for KCAET, Campus supplying pure and filtered water to KCAET campus
4. A new modernized hydraulics lab was established
5. Member of project coordination group of Soil and Water Engineering
6. Research Coordinator of Faculty of Agricultural Engineering and Technology
7. External examiner of TNAU for UG question paper setting and PG and PhD research
8. Officer i/c of Hydraulics lab
9. Officer i/c Campus drinking water supply
10. Chairman of Anti-ragging Squad
11. Member of Technical Committee
12. Member of faculty/ staff grievance redressal committee
13. Member Women's complaint cell

Extension activities:

1. Resource personal for RATTTC, KVK, PFDC and State Agricultural Department on relevant fields.
2. Resource personal for Micro Irrigation training to Engineers in Dept. of Irrigation, Govt. of Kerala

Major Research Accomplishments

- Assessed the consumptive use of wet land paddy in Tavanur region.
- Evaluated the performance of a hydraulic ram pump for different operating conditions in order to find the best operating condition.
- Evaluated the effects of silt pit and moisture conservants on the yield of rubber plantation and suggested suitable soil and water conservation measures.
- Assessed the salient features of ground water resources in KCAET Campus and measures for augmenting ground water were suggested.
- Evaluated the hydraulics and field performance of subsurface inline drip irrigation system in ladies' finger and found the pressure- discharge relationship, moisture distribution pattern and optimum depth & spacing of subsurface drip.
- Estimated the crop water requirement of major crops in a watershed in Bharathapuzha river using GIS.
- Developed a sullage treatment system for grey water.
- Suitability of alternatives to plastic mulch under micro-sprinkler irrigation were evaluated.
- Studied the effect of soilless culture and drip irrigation management in tomato yield.
- Suitability of bio- engineering measure for soil erosion control was explored and found good.
- Developed a green roof model for temperature and runoff management.
- Soil reinforcement using coconut fiber was tested for its efficacy and found good.
- Crop coefficient values of okra for the humid tropical region using lysimeter were developed.
- Crop water requirement and irrigation scheduling of major crops in Pattambi region was estimated using CROPWAT model.
- Subsurface drip irrigation for ladies' finger in sandy loam soil was evaluated and designed to explore its optimal depth and spacing.
- Hydraulics and field performance of a farmer developed novel micro sprinkler was tested and standardized for different pressure-discharge rate.
- Assessed the evapotranspiration models for humid tropical region and identified the best models suitable for the region and their relationship with lysimeter data were generated.
- Water availability and climatic water balance of a selected cropped area in Pattambi region was estimated.
- Technical feasibility and economic viability of hydroponic systems for vegetable production were evaluated and standardized the media and growing system.
- Developed a microcontroller based automatic plant watering system
- Developed an artificial neural network (ANN) model for groundwater level prediction
- Water conservation measures and cropping pattern were suggested for Manali watershed, Thrissur using geospatial techniques and SWAT modelling
- Flood frequency analysis and modelling of flood using HEC-HMS were carried out for a subbasin of Meenachil river
- Mapping, inventory and change detection of wetlands of Tavanur Grama Panchayath was done
- Developed an alternate media filter for drip irrigation system
- Spatial mapping of water supply and distribution network of KCAET campus was done using Total Station and GIS
- Spatio-temporal ground water drought assessment was done for Kalpathypuzha watershed using ANN and GIS

- Developed an IoT based real time climate monitoring and controlling system for greenhouse

PARTICIPATION OF SCIENTISTS INTERNATIONAL/NATIONAL SEMINAR/WORKSHOP/SYMPOSIA/CONFERENCE:

1. National Workshop on Precision Farming Strategies for Enhancing Horticultural Production at KCAET, Tavanur on 25th May 2015.
2. One day workshop on Consultancy and Laboratory Testing in Civil Engineering at NSS College of Engineering, Palakkad on 12th August 2015.
3. One day Workshop on Research Publishing and Plagiarism at KAULIS, KAU, Thrissur on 8.9.2015.
4. Workshop on Soil Survey and Mapping using Geo-informatics at KCAET, Tavanur during 25-26 November, 2015.
5. National workshop on precision farming technologies for banana at AEC&RI, TNAU during 10-11 January, 2014.
6. National workshop on Scientific Writing in Agriculture and Natural Resources at KAU Vellanikkara, Thrissur during 20-25 October 2008.
7. National Convention on Role of Agricultural Engineers in the Development of Cash Crops at TNAU, Coimbatore during 26-27 March 2005.
8. National conference on Natural Resource Management for Eco-Development and Livelihood Security in South India at CSWCRTI, Ooty during 24-25, November 2005.
9. International E-conference on Water Resources Sustainability during 18-20 June, 2021 at IIT Roorkee
10. International Conference (online) on Sustainable Water Management and Ecosystem Restoration during 23-24 June 2021 jointly organized by NIT, Calicut and KITS, Coimbatore.

Refresher courses attended:

1. Research on Agricultural Machines at CIAE, Bhopal, during May 1995.
2. Guide lines for formulating small water resources development schemes at CWRDM, Kozhikode for three days during 17-19, March 1998.
3. On-Farm Water Management at CWDM Kozhikode for 6 days during 12-17 October, 1998.
4. Recent developments in computer modeling in Irrigation and drainage at CSSRI Karnal during November 2003.
5. Watershed planning at CSWCRTI, Ooty during January, 2005.
6. Environmental Science at University of Calicut during 1-21 December, 2005.
7. GIS based decision support system for sustainable agriculture at NAARM, Hyderabad during 5-25 July 2006.
8. Application of Remote sensing and GIS in natural resource management at NBSS&LUP, Bangalore during 11 November-1 December. 2010.
9. Trends and Techniques in Nanotechnology at NIT Calicut during 4-17 July 2010.
10. Introduction to GIS, Essential workflows and Performing analysis at esri India, New Delhi during 1-5 January, 2015.
11. Introduction to Soil Water Assessment Tool at IIT, Chennai during 4-9, January 2016
12. Software applications in water resources management organized by SIST, Chennai, NIT Calicut and ISRS during 16-21, November 2020

13. Water Resources Modelling organized by CAAST-CSAWM, MPKV, Rahuri during February 8-12, 2021
14. Rainfall data analysis using different packages of R-software organized by KSCSTE-CWRDM, Kozhikode, during 12-22 July 2021
15. Advance statistical data analysis using SPSS organized by Science Tech institute, Lucknow, UP during 21-21 September 2021
16. Software applications in water and environmental engineering organized by SIST, Chennai and NIT Calicut during 15-02-2023 to 22-02-2023
17. HRD training for Middle level scientists of KAU, CTI Mannuthy, KAU during 08-03-2023 to 09 -03-2023
18. Irrigation systems and advances organized by NIPHM, Hyderabad during 11-13 July 2023
19. Application of Remote Sensing &GIS in water resources engineering organized by SIST, Chennai and NIT Calicut during 24-28 July 2023

Amenities Management

1. Officer i/c of Computer and accessories, Dept of IDE, 2006-2011.
2. Officer i/c Irrigation Engineering laboratory during 2006-2011.
3. Assistant Warden (Ladies hostel) during 2015- 19.
4. Officer i/c water supply till date.
5. Secretary Staff council 20.03.2009 to15.08.2011.
6. Tour leader of South India study tour of BTech (Agrl Engg) students' of 2013 admission.
7. Executed many farms developmental engineering works of below Rs. 50,000

Membership in Professional bodies

1. Life member of the Indian Society of Agricultural Engineers (ISAE)
2. Member of the Institution of Engineers (MIE), India.
3. Life member of Indian Association of Soil& water Conservationists