

Newsletter

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Azadi Ka
Amrit Mahotsav

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Message

Micro Irrigation is the One Stop Solution to Conserving Water and Increasing Farm Productivity

Shrikant Goenka

President, IAI

India is primarily an agrarian economy, which is the consumer of over 80% of freshwater. The country with 17 per cent of the world population has merely 4 per cent of the fresh water resources. When the country is grappling with a severe water crisis, the importance of micro irrigation is all pervading.

The use of micro-irrigation at the farm level has a history of close to three decades in the country. However, its penetration has been sluggish, and is undoubtedly low when compared to the other developing countries like Brazil and China. Although the Government is resolved to expand the coverage of micro irrigation, the road to achieving this goal is not smooth. **Irrigation Association of India (IAI)**, a national level apex industry body, is an initiative to spread the benefits of micro-irrigation especially drip irrigation to remote areas of the country, while also strengthening the supply eco-system of micro-irrigation systems.

The micro-irrigation sector has over the years been able to attract a lot of investments from international and national companies. By associating with the Central government of India and the State governments, the IAI is working tirelessly towards rapidly expanding the penetration of the technology and help farmers improve farm yields through system supplies, knowledge dissemination, and training.

This Newsletter is an initiative to reach out to all the manufacturers, traders, Governments, and farmers associated with this sector and keep them abreast of the latest developments in the sector. Going ahead the Newsletter will try to address issues related to policies, technologies, finance, market, and also share the perspective of the ultimate beneficiary of this initiative, farmers.



Status of Per Drop More Crop (PDMC) Scheme for FY 2022-2023

The Per Drop More Crop (PDMC) is a Centrally Sponsored Scheme on Micro Irrigation aimed at enhancing water use efficiency and precision agriculture. Adequate focus will be given to promote micro irrigation in water intensive crops, field crops and make potential use of fertigation. In this regard, please find the progress of the scheme in some of the States in the country:-

Western Region: >>

Gujarat: PDMC is operational in Gujarat and Gujarat Green Revolution Company (GGRC) is the State Nodal Agency. About 55 manufacturers of Micro Irrigation Systems (MIS) have been registered so far and this is an ongoing process. These manufacturers will support the State in implementation of the PDMC scheme – design and installation of MIS in farmers’ fields, usage and maintenance of MI infrastructure. The State Government revised the prices of MIS in 2022 and work orders are being issued to MI companies for installation of Micro Irrigation Systems.

Maharashtra: PDMC is operational in Maharashtra and the Commissionerate of Agriculture is the State Nodal Agency. More than 137 manufacturers of Micro Irrigation Systems (MIS) have been registered so far and this is an ongoing process. The State Government has revised the prices of MI components in 2022 and Lottery is run on regular intervals & Pre-sanctions are issued to farmers for installation of Micro Irrigation Systems.

Chhattisgarh: PDMC Scheme is operational in Chhattisgarh and Chhattisgarh Agriculture-Mechanization &

Micro-irrigation Monitoring Process System (CHAMPS) is the State Nodal Agency. The registration process of MI Companies has been initiated and work orders are being issued. The prices of Micro Irrigation Systems have also been revised in 2022.

Southern Region: >>

Andhra Pradesh: PDMC scheme is operational in Andhra Pradesh. The State Nodal Agency Andhra Pradesh Micro Irrigation Project (APMIP) has initiated the registration process of MI Companies in August’22 and is applicable for a period of 5 years. Since registration is an ongoing process, new companies interested in working in the states are eligible to Register with APMIP. The State has revised the prices of MI components in 2022 and work orders are being issued for installation of MIS.

Tamil Nadu: PDMC scheme is operational in Tamil Nadu and Tamil Nadu Horticulture Development Agency (TANHODA) is the State Nodal agency. The registration process of MI Companies has been initiated and is applicable for a period of five years. The prices of MI components has been revised by TANHODA in August 2022 and it is issuing Work Orders to MI Companies w.e.f September 2022.

Karnataka is among the leading States with one of highest areas under micro irrigation coverage. The Department of Horticulture has recently released a list of 61 MI Companies registered for implementation of PDMC scheme in the State who have been empanelled for the year FY 2022-23. An additional 35 companies are awaiting approval of their registration. The implementation of the scheme is likely to start shortly.



Northern Region: >>

Rajasthan: PDMC scheme is operational in Rajasthan and the Department of Horticulture is the State Nodal Agency for implementation of the scheme. With Work Orders issued in the State, the State has also recently revised the prices of MI component in July 2022–2023. The State has registered many MI companies for implementation of the PDMC scheme and registration is open for new companies.

Uttar Pradesh: PDMC scheme is operational in Uttar Pradesh. The State Nodal Agency for implementation of the scheme is the Director of Horticulture & Food Processing. The process of Registration of MI Companies has been initiated and new Companies can apply for Registration with SNA. The State Government has revised the prices of MI components in 2022 and Work Orders are being issued to MI companies for installation of MIS.

Punjab: PDMC scheme is operational in Punjab and the Department of Agriculture and the Department of Horticulture are responsible for implementation of the scheme in the State. The work orders have been issued in the State and MI components prices were revised in June 2022. MI manufacturers are also registered and registration of new companies is open.



MEMBER CONNECT

IAI Maharashtra State Chapter Meeting,
Pune, 9th Nov-2022



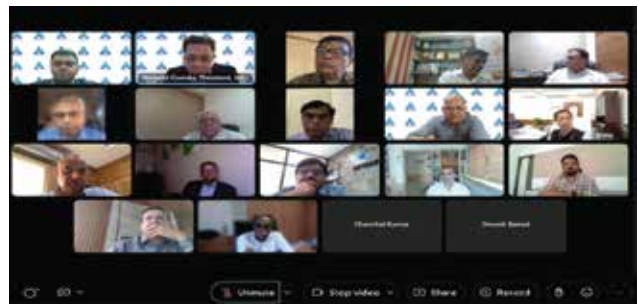
Review Meeting of PDMC Scheme with States
under Chairmanship of Shri Franklin Khobung,
Joint Secretary, MoA&FW, 8th Dec-2022



IAI Tamil Nadu State Chapter Meeting,
Chennai, 12th Dec-2022



IAI Executive Committee Meeting & Interactive
Session with Shri Franklin Khobung, Joint
Secretary, MoA&FW, 15th Dec-2022



MEMBER SUPPORT

Policy Advocacy

Representations
Stakeholders' consultation
Liaisoning with Central and State Govt

Knowledge Dissemination

Knowledge Report, Newsletters
Conference, Workshops, Seminar

Brand Promotion

Expositions, Exhibitions
Awards & recognitions
Branding & promotion opportunities for members

Research

Primary and Secondary research for strengthening
policy advocacy
Market research, economic research

Aggregated Services (negotiated based on economies of scale)

Subscriptions/ memberships
Processing and procurements

Exposures

Delegations and Exposure Visits

Training

Skill /Technology based

Few Highlights of IAI Policy Advocacy

- IAI has been working on thought leadership for sectoral development and has created a repository of knowledge resource for the benefit of its members
- Continuous representations and follow-ups with BIS resulted in significant cost savings through reduction in marking fees for Emitting Pipes/Sprinkler Nozzles/HDPE Quick Coupled Sprinkler Pipes to the tune of ₹13 L/per year/per extrusion lines for each MI Company
- Policy advocacy for the benefit of MI industry including revision of PDMC Guidelines and its cost norms from Government of India

Revision of By-Laws & Implementation of Operational Guidelines

The revision of IAI By-Laws after due approval from the General Body resulting in implementation of

- Single membership fee for being part of all IAI State Chapters
- No membership fee by State Chapters
- Transparency in accounting by unified accounting system

The implementation of organization's Operational Guidelines after approval from the NEC

- Towards ensuring better Corporate Governance
- To make the organization system driven
- Defined the roles and responsibilities of each and every office bearer and committee members for smooth and systematic operations of the Association

Opening office in New Delhi at a very reputed location - World Trade Centre, Near Barakhamba Road

Office Address: 99, Ground Floor, World Trade Centre, Babar Road, Beside The Lalit Hotel, New Delhi -1



INCREASING WATER PRODUCTIVITY IN AGRICULTURE: WAY FORWARD

INTRODUCTION

India is staring at a Water Apocalypse and Water – a finite source is New Oil. Water supply is constant and fast depleting. Water crisis is further compounded with rapid increase in demand due to urbanization, social changes, population growth, Climate Change and unsustainable water withdrawals.

The per capita water availability of 1700 cu.m of any nation is said to be a cutoff point and anything equivalent or below this level is said to be highly stressed. As per the report of Central Water Commission (CWC), the average annual per capita water availability of our country has declined to the extent of 70 % in last 60 years from 5177 cubic meter in 1951 to 1500 cubic meter in 2011 and is projected to reduce further to 1341 cubic meter in 2025 thus making India as one of the most water stressed nation.

Water demand shall increase by 34 % by 2025 and from 2025 to 2050 demand shall surpass availability and the Demand Supply Gap leading to Water scarcity leading to instability, migrations directly affecting economic prosperity and is a major escalating challenge for business. As per World Economic Forum, Water crisis has been enlisted as one of the top most risks since last 7 years exacerbated by Climate Change.

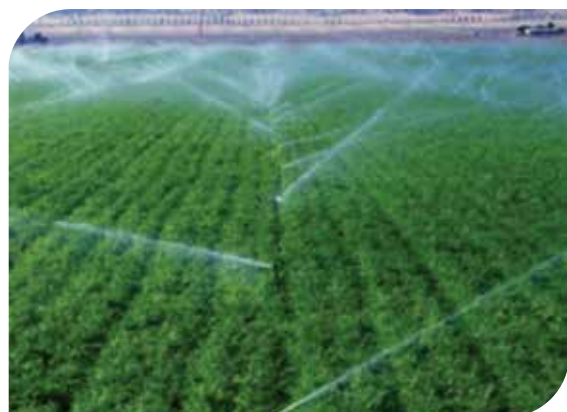
CLIMATE AND WATER

The World Bank has stated that Climate Crisis is in fact Water crisis. Climate change is exacerbating the situation by causing longer dry spells and higher intensity of rainfall in India. The number of heavy rainfall events in India has increased by 6% per decade as per World Resource Institute. Half of India's annual precipitation falls in just 15 days and with such high intensity rains, water does not percolate into the ground to recharge the aquifer and quickly runs off. Water and Agriculture are inextricably linked and impact of water crisis significantly impacts Agriculture sector, upsets maintaining sanitation and hygienic conditions on farms affecting Agricultural supply chains and implementation of Good Agricultural Practices on farms.

On the other hand, the 110 years monsoon average of the country is 890mm which is 4000 BCM of precipitation, then the obvious question is why is our country so water stressed and glaring at a water catastrophe when a country like Israel has per capita availability of 90 cu.m only.

The GOI scheme named "Per Drop More Crop" means higher production from every cubic metre of water consumed which mean higher kg/m³ of water and is in fact the definition of Water Productivity or Water Use Efficiency. The reason therefore is not about the quantum of water available but its management and demands a remarkable transformation and a tectonic shift in our approach from Productivity in terms of Yield per unit of area (kg/ha) to Per Drop More Crop which is Water Productivity defined as Yield per unit of water utilized in terms of (kg/m³). Globally,

Agriculture sector accounts to 70% of fresh water withdrawals and as per World Resources Institute (WRI) whereas as per CWC, in India the figure is whopping 80% for agriculture sector leaving just for 7% industries and power generation, 6% for domestic use and 7% for other use.



INDIA'S WATER SCENARIO

As per table-1 below, the water requirement by 2050 shall be 1,180 BCM, whereas the total availability of water in country from all available sources is still lower than this projected demand, at 1,123 BCM and we are staring at shortage of approx. 57 BCM in 2050 which is absolutely catastrophic.

Future Water Demand from Various Sectors:

Total Water Requirement for Different Use in BCM (High demand Scenario)			
Year	2010	2025	2050
Irrigation	557	611	807
Drinking Water	43	62	111
Industry	37	67	81
Energy	19	33	70
Others	54	70	111
Water Demand from all Sectors	710	843	1180
Availability of Utilizable Water	1123	1123	1123
Excess / Shortfall	413	280	-57

Source : NCIWRD, MOWRD

The above background calls for modernization of Canal Command Area (CCA). The irrigation network should and not remain a mere water distribution network but to be designed on principle of Integrated Water Resources Management (IWRM) and moving from traditional "Supply" based systems to "Demand" based systems with last mile connectivity with Micro Irrigation. Promotion of water Stewardship and increasing Water Use Efficiency in Agriculture is unthinkable without Micro irrigation.

Strategies for achieving Water Productivity and thereby addressing Water Scarcity: Out of 17 Sustainable Development Goals (SDG) framed by the UN, the SDG- 6 deals with Water and Sanitation and is framed for addressing Water scarcity in the back drop of Climate Change. Especially Target of SDG 6.4 and SDG 6.5 is as below:

- SDG 6.4 : is to substantially increase water use efficiency by 2030 and ensure sustainable withdrawals and supply offresh water to address water scarcity and sustainability
- SDG 6.5 : targets Implementation of Integrated Water Resource Management (IWRM) at all levels which is a way to promote the coordinated development and management of water, land and related resources to maximize theeconomic and social welfare.





STRATEGIES TO ACHIEVE WATER PRODUCTIVITY

- Increasing Water Productivity with Micro irrigation for all crops
- Modernization of Canal Command Area (CCA): The irrigation network should not remain a mere water distribution network but to be designed on principle of Integrated Water Resources Management (IWRM) and moving from traditional "Supply" based systems to "Demand" based systems.

MICRO IRRIGATION

Over the past two decades, the agricultural technology which has been widely adapted and has truly led to transformation in the agri-horti sector is Micro Irrigation which once was installed for horticultural crops and all closed spacing crops such as vegetables, Cotton, Sugarcane, oilseeds, pulses, wheat and cereal crops is now also being extended to Rice and Wheat based cropping systems. It is a proven fact that the crop yields increase due to assured irrigation. The crop yields of rain fed areas are far less than those of irrigated areas. It has been anticipated by analysts worldwide that the global population shall exceed 9 billion by 2050 which will require an estimated 60 % more food.

ANALYSIS OF AREA UNDER MICRO IRRIGATION IN THE COUNTRY

Micro Irrigation is a broad term and mainly categorized as Drip and Sprinkler Irrigation Systems. The Sprinkler irrigation systems based on discharge, area coverage and operating pressure range are categorized in to Overhead Sprinkler Systems and Rain gun systems where as Drip, Mini and Micro Sprinkler Irrigation Systems require lower operating pressures from 1 to 2.5 kg/cm² and are broadly categorized under Drip Irrigation systems.

India has Net sown area of 141.4 mha out of which Net irrigated area is 69 mha which translates in to 48% farmers having source of water for irrigation leaving rest of the 52 % farmers with Rainfed farming. India is one of the top five countries in the world as far as area coverage by micro irrigation is concerned, yet out of the total net irrigated agriculture area of 69 mha in last two decades approx. 15- 20 % of the irrigated area has been covered under Micro Irrigation despite subsidies in range of approximately 50 % and above on the capital investment to the grower.

WAY FORWARD

Efficient water management, increased productivity of land, reduction in wastage of resources are essential for achieving such food production targets from available agricultural land which itself is again depleting posing a new challenge. Higher crop intensification and greater annual crop productivity are essential to meet the challenges arising out of population explosion, climate change, droughts and is further leading to increased pressure on water conservation for achieving Water and Food Security. It has been established that Micro Irrigation adaptation leads to nearly 30 - 40% increase in yields (Food security), saving in water to the extent of 80% (Water Security) and saving in Energy (Energy Security) in almost all the crops and adoption of Micro Irrigation is the only way to increase Water Productivity in Agriculture while also making the farming economically viable.

SMART FARMING: CONCEPT AND TECHNOLOGIES

Precision Farming is defined as managing variations in the field accurately for higher productivity with fewer resources thereby reducing input and production costs. The advent of Micro Irrigation Systems has enabled precision in application of water and fertilizers at the right place, at right time and in a right way. Automation of Irrigation systems using controllers, solenoid valves further enabled not just precise application and time or volume based optimization of inputs but mainly accurate fertigation scheduling based on real time monitoring of EC and pH through the microirrigation systems. As per UN Intergovernmental Panel on Climate Change (IPCC), report on Climate change induced warming have increased frequency, intensity and duration of heat waves, have changed the precipitation patterns causing longer dry spells, higher intensity of rainfall in India and half of India's annual precipitation falls in just 15 days therefore requiring the adoption of climate-smart irrigation principles and hence Smart Farming techniques. Unpredictability in weather conditions necessitates swiftly controlling farm operations in real time using Information & communication Technology. Monitoring farms from remote location digitally by connecting sensors installed on farm with controllers, Remote sensing, GIS softwares, Artificial Intelligence, Internet of Things (IOT) and robotics and SCADA systems, integration of sensors with machines makes farming process data driven is Smart Farming.

GPS SOLUTION

To monitor farm from remote location Global Positioning Systems (GPS) receivers are used. The GPS equipment either hand held once or mounted on farms are used for Geo- Mapping of the farm. GPS device records the position of the field using geographic coordinates (latitude and longitude) and provides continuous information of the farm in real time, having precise location information at any time allows soil and crop measurements to be mapped. The Geographic information systems (GIS) are computer hardware and software that use feature attributes and location data to produce maps. An important function of an agricultural GIS is to store layers of information, such as yields, soil survey maps, remotely sensed data, crop scouting reports and soil nutrient levels.

DECISION SUPPORT SYSTEMS

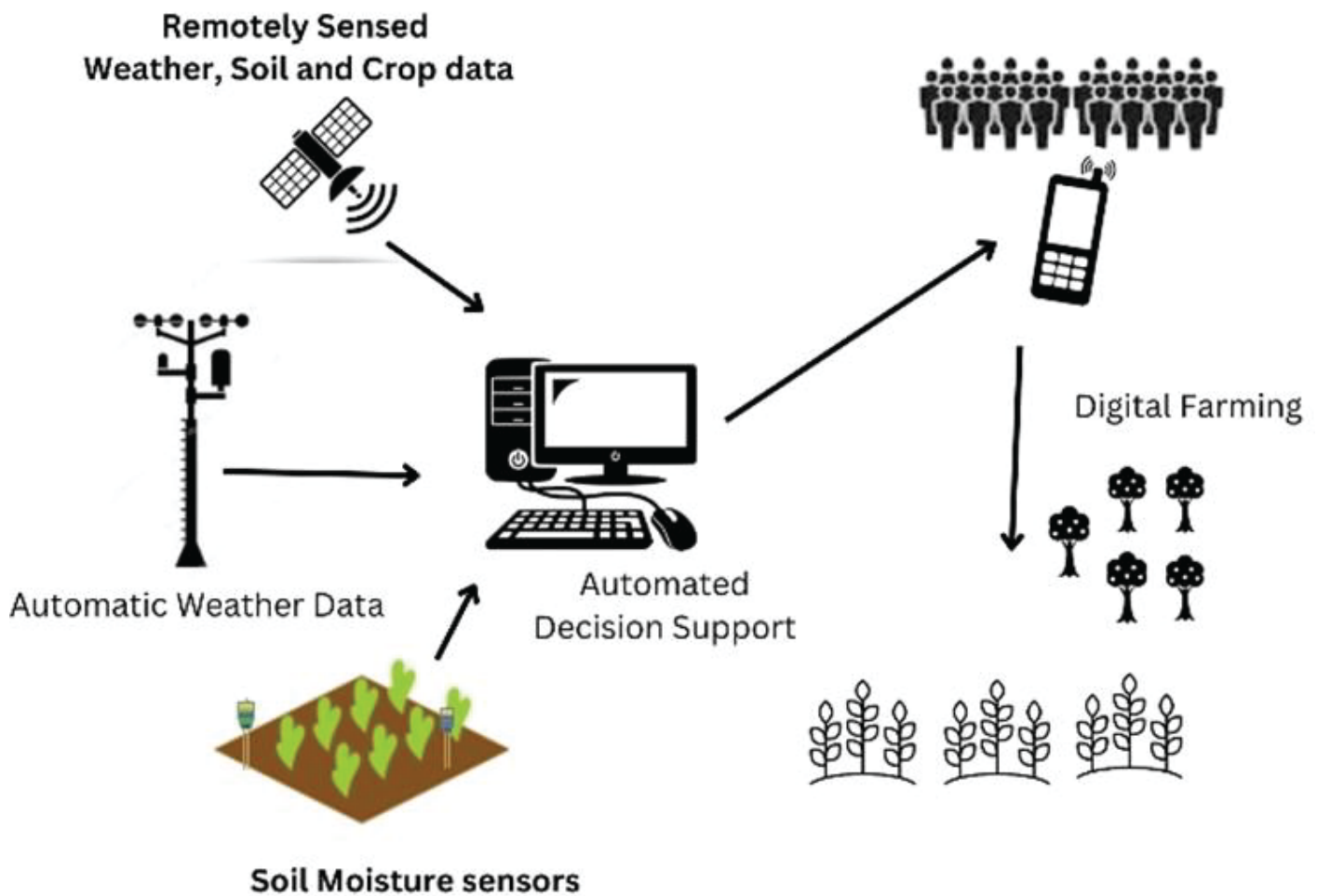
Smart farming enables translation of data to significant decision to be taken on farm and is a Decision Support Systems (DSS). The input data from digital sensors placed on farm for measuring Soil Moisture, Dynamic Evapotranspiration, Pressure, Flow, Level, Ec, ph, Water meters, Rain sensors etc is fed to a cloud-hosted IoT platform along with third party data.

IOT BASED SOLUTION

The IoT Platform has input of standard conditions required on farm and has predefined values and models. The data from sensors is analyzed with standard conditions and deficiencies identified and what location-specific treatment is necessary is the output which supports farmer to take action. Artificial Intelligence (AI) based algorithm analyze data to generate real-time recommendations, predictive models and support data-driven decisions. The sensors capture real time status of crops and field conditions. Further, forecasting of rains and weather conditions assists in taking decisions on harvesting, irrigation and spraying pesticides etc. Thus, an era of economically viable and productive efficient farming technologies has dawned.

When we have very large projects (community Farming), its practically impossible to run cables and wiring systems throughout the farms and all operations are to be controlled from a remote control room and we need wireless units. This is done using Remote Terminal Units (RTU) using cloud Based Application Supervisory Control and Data Acquisition (SCADA) is a system of software and hardware elements that allows to:

- Control irrigation processes
- Monitor, gather, and process real-time data
- Directly interact with devices such as sensors, valves, pumps, motors, and more through Human-Machine Interface (HMI) software
- Record events into a log file



SCADA systems are crucial for automation since they help to maintain efficiency, process data for smarter decisions, and communicate system issues to help mitigate downtime. The basic SCADA architecture begins with Programmable Logic Controllers (PLCs) which communicate with an array of objects such as Human Machine Interface (HMIs), sensors like flow, pressure, level etc., and end devices like valves, and then route the information from those objects to computers with SCADA software. The SCADA software processes, distributes, and displays the data.

DIGITAL FARMING

Soil moisture condition in the farm has a very high bearing on the crop yield. Irrigation management can be a solution. Using crop data and planting date information, we can compute the amount of water lost to evapotranspiration that should be provided by irrigation systems. High resolution data for meteorological conditions around the globe is assimilated, allowing precise calculations. Using remote sensing satellite data, soil moisture level at the root zone level is estimated, without deploying any physical sensors in the farm. Digital Farming helps in mitigating risks in agriculture by responding to inter and intra field variability in crops and deploying site specific treatment to increase agricultural production and protect the environment. Geo-tagging of farms, digitization of agri-value chains, big data analytics, Internet of Things and artificial intelligence in agriculture are the next drivers of Scientific agriculture and a new growth trajectory



About IAI



Irrigation Association of India (IAI) is an apex industry body established in 1999, representing Micro Irrigation System (MIS) manufacturing companies in India. It is a not-for-profit organization and is working towards the successful implementation of Micro Irrigation in India for the benefit of farmers.

Offices and State Chapters



State Chapters:

- ✓ Andhra Pradesh
- ✓ Bihar
- ✓ Chhattisgarh
- ✓ Gujarat
- ✓ Haryana
- ✓ Jharkhand
- ✓ Madhya Pradesh
- ✓ Maharashtra
- ✓ Odisha
- ✓ Rajasthan
- ✓ Tamil Nadu
- ✓ Telangana
- ✓ Uttar Pradesh
- ✓ West Bengal



Join IAI now to get multiple benefits.

Call +91 978 440 7875
membership@iaiiindia.org

MEMBER BENEFIT 1

Voicing concerns of irrigation industry through advocacy for policy change

MEMBER BENEFIT 2

Awareness on technology, policies, & market trends through meetings & conferences

MEMBER BENEFIT 3

Networking with the irrigation industry stakeholders

MEMBER BENEFIT 4

Support in expanding business in multiple States

MEMBER BENEFIT 5

Regular updates & industry insights through newsletters, magazines, directory & website



IAI Membership subscription is open for FY2022-23 for Micro-Irrigation companies. Suppliers, Technical Institutions and others.

