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International Commission on Irrigation and Drainage (ICID)



Dr Lalbahadur Joshi
Rivulis Irrigation India Pvt. Ltd, India

**Community Based Irrigation Intelligence
(A Case Study of Rajasthan)**

2nd Indo Global Irrigation Summit
24-25 June 2026, New Delhi India

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Community Based Irrigation Intelligence (A Case Study of Rajasthan)

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WE CAN'T GROW WITHOUT WATER!

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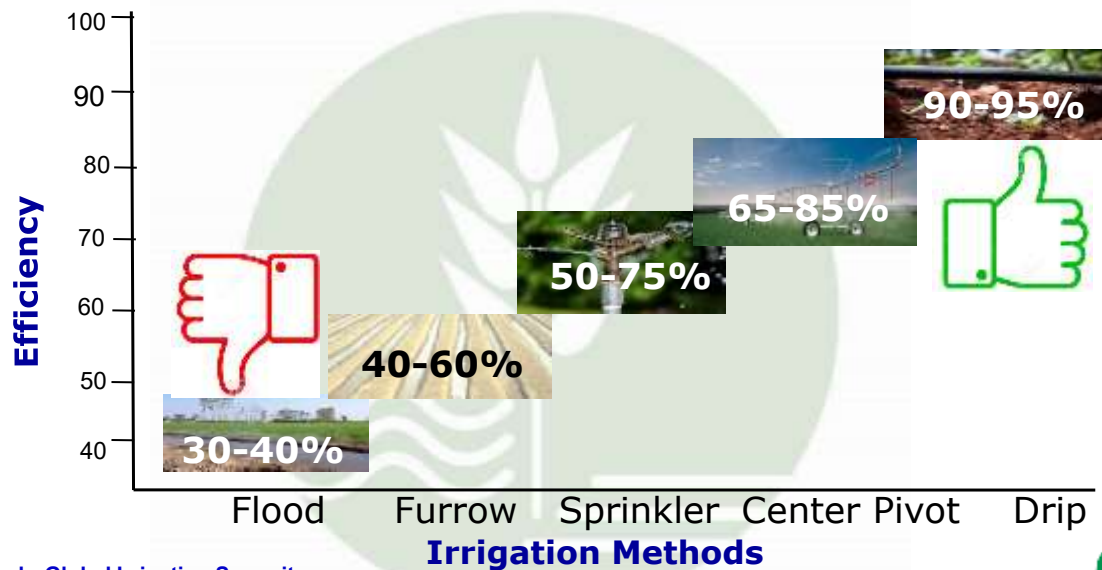
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IRRIGATION EFFICIENCY

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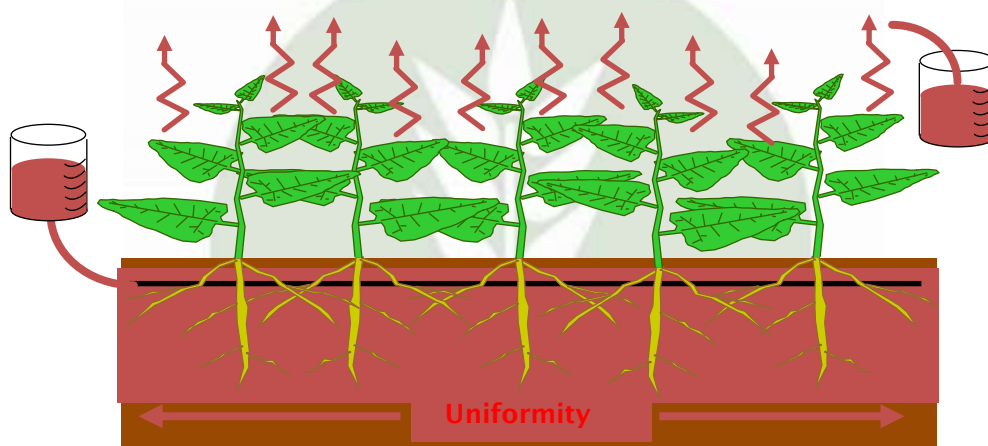
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WATER REQUIREMENT

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Irrigate only to match daily crop water use



Minimize Deep Percolation

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IRRIGATION INTELLIGENCE

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**DO WE REALLY
KNOW WHEN
AND HOW MUCH
TO IRRIGATE?**



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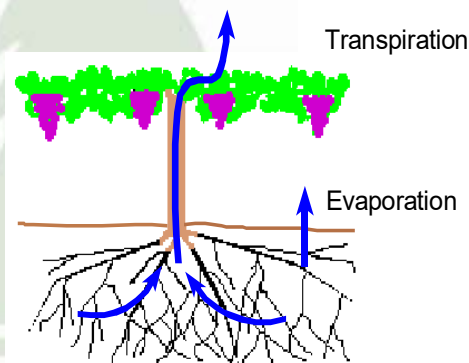
WATER REQUIREMENT

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- ▣ Crop Water Requirement = Evapotranspiration (ET_c)
- ▣ It is a combined loss of water through both evaporation as well as transpiration

$$ET_c \text{ (mm/day)} = ET_0 \times K_c$$

- ▣ ET₀ in mm/day
 - (changes with change in season)
- ▣ K_c is crop coefficient
 - (changes according to crop growth stage)



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AVAILABLE IRRIGATION SCHEDULING TECHNIQUES

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Tradition /
Intuition



- Not scientific
- Room for Optimization

ETC Tables
(Protocols)



- Not specific to my field
- Outdated information

Soil & Plant
Sensors



- Logistically challenging
- Single-point reading



Hardware-free,
Whole-field
Irrigation
Intelligence

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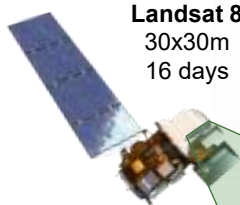


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Landsat 8
30x30m
16 days



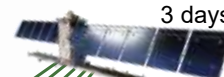
Sentinel 2
10x10m
5 days



Planet SCOPE
3x3m
1 day



Sentinel 1 – RADAR
10x10m
3 days



UNIQUE!
Cloud Penetration
RADAR imaging



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Provides a hardware-free daily irrigation recommendations and crop monitoring for better Water Use Efficiency

- Software-only solution, No Hardware, No maintenance
- Irrigation scheduling on daily basis and actual field ETC
- Hi-frequency & hi-resolution crop health monitoring maps
- Early detection of irrigation and crop development issues
- Weather prediction of 14 days
- Users friendly (through WhatsApp) & Operationally cost-effective



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RAJASTHAN CASE STUDY

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❖ Project Kickoff with Rajasthan Government (2025–2026):

We have commenced the Manna Irrigation Project in partnership with the Government of Rajasthan, with the objective of improving irrigation efficiency, promoting sustainable water management practices, and supporting smallholder farmers across the state.

❖ Coordination with Government Officials for Data Acquisition:

* Held meetings & discussions with **JDH** (Joint Director Horticulture) & **DDH** (Deputy Director Horticulture) from all 9 divisions to streamline and enable the sharing of farmer data for the Rajasthan Project.

* Initiated and advanced the process of compiling and organizing data for 3,500 farmers across all 9 target divisions: **Alwar, Sikar, Chittorgarh, Dholpur, Jhunjhunu, Karauli, Rajsamand, Sawai Madhopur and Bhilwara** as part of the Rajasthan Project

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RAJASTHAN CASE STUDY

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Project Overview	
Project Name	Manna Irrigation Project
Partner	Government of Rajasthan
Objective	Improve irrigation efficiency and support smallholder farmers through micro-irrigation adoption
Total Farmers Covered	3,500
Total Districts	9
Project Team Strength	10 Members
Team Structure	9 District Coordinators + 1 Team Lead

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PROJECT AREA – RAJASTHAN (9 Districts)

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Name of District	No. of Farmers (Total)	Area (Hectares)	Crops	Type of Irrigation System
Alwar	601	229.40	Chickpea, Chili Pepper, Citrus Lemon, Guava, Soybeans, Tomatoes (Fresh), Wheat (Spring)	Drip & Sprinkler
Bhilwara	301	284.10	Chickpea, Chili Pepper, Garlic, Tomatoes (Fresh), Wheat (Spring)	Drip & Sprinkler
Chittorgarh	501	520.60	Alfalfa, Chickpea, Chili Pepper, Citrus Lemon, Corn (Grains), Garlic, Groundnuts, Guava, Tomatoes, Soybeans, Tomatoes (Fresh), Wheat (Spring)	Drip & Sprinkler
Dholpur	401	163.40	Chickpea, Chili Pepper, Citrus Lemon, Guava, Potatoes, Tomatoes (Fresh), Wheat (Spring)	Drip & Sprinkler
Jhunjhunu	255	216.20	Chickpea, Groundnuts, Wheat (Spring)	Drip & Sprinkler
Karauli	401	207.30	Chickpea, Citrus Lemon, Guava, Tomatoes (Fresh), Wheat (Spring)	Drip & Sprinkler
Rajsamand	251	68.80	Barley, Chickpea, Chili Pepper, Citrus Lemon, Corn (Grains), Wheat (Spring)	Drip & Sprinkler
Sawai Madhopur	529	486.40	Chickpea, Chili Pepper, Citrus Lemon, Garlic, Guava, Tomatoes (Fresh), Wheat (Spring)	Drip & Sprinkler
Sikar	269	119.40	Barley, Chickpea, Citrus Lemon, Groundnuts, Tomatoes, Tomatoes (Fresh), Wheat (Spring)	Drip & Sprinkler
Grand Total	3509	2195.60	Multiple Crops Across Districts	

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RAJASTHAN CASE STUDY

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❖ Key Activities Undertaken :

1. Government Stakeholder Coordination

Conducted meetings and discussions with **Joint Directors of Horticulture (JDH)** and **Deputy Directors of Horticulture (DDH)** from all **NINE** districts to establish project execution plans and streamline the process for sharing farmer databases and beneficiary information.

2. Farmer Database Compilation

Initiated and advanced the process of collecting, verifying, and organizing data for approximately **3,500 farmers** across all target districts. This activity includes beneficiary identification, eligibility verification, and district-wise farmer mapping.

3. District-Level Resource Deployment

A dedicated project coordinator has been assigned to each district to ensure smooth implementation, farmer engagement, and timely execution of project activities. The Team Lead oversees planning, monitoring, reporting, and stakeholder management across all districts.

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4. Demonstration Activities

Organization of field demonstrations showcasing irrigation technologies, system performance, water-saving benefits, and best agronomic practices to encourage farmer participation and adoption.

5. Field Monitoring & Follow-up

Regular field visits, farmer meetings and farmer interactions are being conducted to monitor project progress, address farmer queries, and ensure effective implementation at the ground level.

The team is educating farmers about Manna and its benefits in improving irrigation management and crop planning.

6. Farmers are being guided on:

- Proper irrigation scheduling
- Water management practices under extreme heat conditions
- Crop-wise irrigation recommendations
- Efficient utilization of drip irrigation systems
- Maintaining soil moisture and reducing water stress
- Best practices for vegetable crop irrigation

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नई सैटेलाइट छवि प्राप्त हुई है। आपके खेत की सिंचाई संबंधी सलाह उसी के अनुसार अपडेट की गई है। तस्वीर देखने के लिए लिंक पर क्लिक करें:
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7. Progress Tracking & Reporting

As part of the project monitoring and governance framework, the team is preparing and submitting **weekly district-wise progress reports and insights** to the respective **Joint Directors of Horticulture (JDH)** and **Deputy Directors of Horticulture (DDH)** across all nine project districts.

The weekly reports include:

- * Farmer data collection status and validation progress
- * District-wise farmer coverage and outreach activities
- * Farmer meetings conducted and participation details
- * Manna demonstrations completed and planned
- * Field visit summaries and observations
- * Challenges, bottlenecks, and support requirements
- * Key achievements and milestones attained during the week
- * Action plan and targets for the upcoming week

8. Farmer Awareness & Engagement Programs

Planning and execution of village-level farmer meetings to create awareness regarding efficient irrigation practices, water conservation, and the benefits of the Manna Irrigation Project.

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RAJASTHAN CASE STUDY (Snapshots of Farmer Meeting)

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Rivulis

FARMER TRAINING PROGRAM ON COMMUNITY BASED AI SOLUTION

Conducted by Rivulis Irrigation India Pvt. Ltd.
(Manna Irrigation)

Supported by Govt. of Rajasthan



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RAJASTHAN CASE STUDY (CUSTOMER TESTIMONIAL)

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MANNA (BY RIVULIS) TESTIMONIALS

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Name of Grower	Crop	% Increase in Yield	% Increase in WUE	Yield (Tons/Ha)		Water Used (mm)	
				Manna	Control	Manna	Control
CICR	Cotton	50%		2.25	1.5	270	768
Ganpat Choudhary	Tomato	73	61	48	28	268	288
Sitaram Borkar	Sugarcane	13	0	175	150	1678	1503
Amar Gade	Sugarcane	66	37	120	72	1465	1209
Abhijeet Gade	Pomogranate	7	70	8.6	8.1	560	892
Annu More	Table Grapes	9	63	7.5	6.8	419	627

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