



## Solution:

### Land Laser leveller for enhancing irrigation use efficiency

**Submitter: (ICRISAT)**

#### Solution Overview

What is it, and what problem does it solve? Brief 2–3 sentence description.

Land laser levelling is a precision method used to level agricultural fields (if land slope is less than one percent) with the help of laser-guided technology, ensuring a uniformly flat surface. This technology addresses problems of inefficient water distribution, which can lead to reduced crop yields and water wastage. By creating a level field, it enhances irrigation use efficiency, enabling uniform water application, reducing irrigation time and labor, and improving overall crop performance.

#### Key Features & Benefits

Main components and why it is useful? Bullet points summarizing methods, tools, and value added.

Laser land levelling significantly improves irrigation efficiency by ensuring uniform water distribution, reducing water consumption by up to 20–30%. It minimizes water runoff, prevents waterlogging, and reduces the time and energy needed for irrigation. Additionally, it enhances crop establishment, improves nutrient use efficiency, and supports higher and more uniform crop yields. Its precision and long-term benefits make it especially valuable in water-scarce and productivity-challenged farming regions.

#### Where It Works and Where It Can Work

Existing and potential target regions, agroecologies, or farming systems. Include examples if available.

Laser land levelling has been successfully implemented in irrigated regions of South Asia, where traditional irrigation methods often lead to uneven water distribution. It is widely used in rice-wheat systems of the Indo-Gangetic Plains, improving water use and crop yields. It also works effectively in canal-irrigated and groundwater-irrigated areas, where precision in water management is critical. It is also useful in arid and semi-arid tropics where annual rainfall amount less

than 800 mm. This technology can be scaled to any flat or gently sloping agricultural land, especially in semi-arid and arid regions facing water scarcity. Additionally, it can be adopted in high-value horticultural zones and areas transitioning to climate-smart agriculture, where optimizing input use is crucial for sustainability and resilience.

#### Evidence & Impact

What results has it shown? Stats, pilot outcomes, or testimonials.

Laser land levelling has demonstrated significant benefits in enhancing water use efficiency, crop yields, and farm profitability across various agricultural settings. ICRISAT demonstrated technology in UP and Karnataka states which have shown higher resource use efficiency.

Agricultural systems: <https://doi.org/10.1016/j.agsy.2021.103276>

#### Scalability & Adoption Support

Why it can be scaled and what's needed to adopt it?

Low-cost, adaptable, partner-ready, etc.

Laser land levelling is a proven, high-impact technology that offers measurable benefits in water savings, crop yield improvements, and cost efficiency, making it highly attractive for both smallholder and large-scale farmers. It is mechanically simple, durable, and compatible with existing tractors and farm machinery. Its benefits are immediate and visible, which encourages farmer-to-farmer adoption. Moreover, it is climate-smart and resource-efficient, aligning with government and donor priorities for sustainable agriculture, especially in water-stressed regions.

#### Partners & Contact Info

Who's involved and how to connect? List of key contact and partners + email / phone.

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