

4.4 Soil Moisture Digital Monitoring: Major Savings in Groundwater Use and Energy Demand

Breaking the circle: intensive agriculture makes unsustainable demands on water and energy resources

Annual dual cropping of wheat and the use of rice paddy systems emerged from the original green revolution as highly productive practices, but these create substantial pressure on limited water resources in arid regions of India. TIGR²ESS researchers used direct engagement with farmers and policy makers in the Punjab State, to introduce new technologies and provide evidence for good-practice, saving over 80 billion litres of water in this region alone.

Changing farmer behaviour to conserve or diversify

The Indo-Gangetic plain groundwater is falling at a rate of 0.25-1 m per year. Currently the Punjab State Government subsidises energy requirements for pumping water for irrigation use. Reducing water by one third, would slow groundwater depletion and save around 2300 CR (0.23 billion GBP) in energy subsidies and emissions.

TIGR²ESS project partners at CIPT used a number of interventions to promote water efficient technologies and practices (WETP) and these activities were demonstrated and promoted through farmer communities and Farmer Producer Organisations. The value of these innovations guided policy recommendations formulated with Regional Government stakeholders.

“The Food Policy in India is required to be reoriented and redirected to assure quality food to all at all places at all times by transforming the existing systems, structures, and processes that increase agriculture, water, and energy productivity. The efforts of CIPT that include developing and piloting new models, technologies, and practices for effective water and energy management, fully reflect on these long-cherished goals”.

Mr Suresh Kumar TIGR²ESS Policy Fellow, Former CPSCM

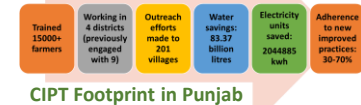
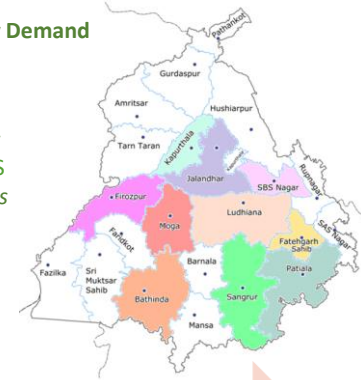
Benefits of soil meters outweigh initial infrastructure costs

The current banded paddy system relies on flood irrigation staged 3 -5 times during the growing seasons, largely irrespective of actual crop water demand.

The CIPT team worked with farmers across 4 major districts Punjab State, trialling 2000 digital soil moisture sensors, each linked to a mobile phone app that indicates soil moisture status and irrigation requirements. The benefits in terms of reduced water use and energy demand translate into reduced subsidised expenditure, and ultimately, in yields and farmer income.

The plan is to expand this and other advances, including monitoring precipitation and pump water flows and encouraging uptake of a water credit voucher system, across many districts in the Punjab with the support of State government. The goal is to reduce 1,200 billion litres of water loss over 100,000 acres in two years bringing benefits to this region that can be translated across farming communities in India.

Proposed Program Districts



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