

5.5 Holistic solutions for on-farm sustainability in Punjab, India

Since the introduction of Green Revolution technologies, the state of Punjab has become the Granary of India. This has come at a price, with farmers entrapped in a cycle of unsustainable production systems, bringing socio-economic instability, leading to agrarian distress across the region. TIGR²ESS researchers developed and piloted innovative intervention models with rural communities, which consider a suite of economic, environmental and social factors. These innovations provide promising solutions for securing sustainable farming systems.

Researchers at Panjab University captured an overview of farm-level sustainability by integrating economic, environmental and social sustainability indicators using the stock-and-flow framework to propose a **Comprehensive Farm Assessment Index**.

Dynamic early-career researchers facilitated stakeholder engagement which included field surveys, interviews, focus group discussions, and workshops. Immersive engagement with the farmers enabled researchers to map constraint-based creative solutions for more sustainable agriculture practises.

Farmers' innovations ranged from adopting experimental farming systems, improvising agricultural machinery/implements, processes, water conservation, storage and preservation, and using mobile phone applications.



Although innovations were designed to be locally applicable, most solutions have wider applicability and replicability.



"TIGR²ESS at PU has fleshed out the cross sectionalities in the sustainable agriculture, nutrition and skill development realms and used this understanding to liaise with stakeholders across the board to come on the same page vis-a-vis sustainability. This is a work in progress; the innovative and entrepreneurial farmer – the 'x' factor – is there; what is required to drive diversification and sustainability in effect is reasonable infrastructural support, especially for processing and marketing".

Prof Ramanjit Kaur Johal, Panjab University



Farm innovations clockwise from top left: Planting to attract pollinators; Drip Irrigation; Agri-voltaics through solar panels; Fruit netting bags; **right:** Multi-tier zero energy storage

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