



Coop Research Program | Call 2

## Sustainable intensification of organic Basmati rice production: a multidisciplinary systems approach

### Background

Recommendations for crop management are often based on research trials comparing different management practices. At this scale, resources such as fertilizers and labour are typically optimized to maximize yield or minimize environmental damage per unit yield obtained. In practice, farmers must manage profitability of the whole farm and do this by strategically allocating land and resources available to them. This is particularly challenging for smallholder farmers with limited resources, such as rice farmers in Uttarakhand, India. This research stems from a well-established agricultural development project implemented by Helvetas Swiss Intercooperation in close collaboration with Intercooperation Social Development India.

### Objective

This project aims to assess the impact of alternative organic rice management practices on the economic, environmental and social sustainability of the farm by coupling field experimentation, farm surveys, bio-economic modeling and trade-off analysis in a participatory framework.

### Research Approach

We use multiple methods including the bio-economic farm model, 'FarmDESIGN', which simulates flows of resources such as money, manure, organic residues and labour; farm surveys and semi-structured interviews with stakeholders; novel participatory approaches to assess trade-offs between sustainability goals; and greenhouse gas emissions and

nutrient pathways measurements from our research trial and participating farms to calibrate our models.

### Relevance and Expected Outcomes

This project will (1) provide management recommendations for organic Basmati production, considering complexities of the whole farm system; and (2) contribute to the advancement of state-of-the-art methodologies for assessing farm-level sustainability. Results will be relevant to rice farmers and stakeholders in Uttarakhand and beyond.

### Food System Challenges Addressed

Organic production systems, farm-level sustainability, greenhouse gas mitigation.

[www.worldfoodsystem.ethz.ch/research/CRP](http://www.worldfoodsystem.ethz.ch/research/CRP) →

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