

# Water and well-being: Influence of irrigation access on food security among smallholder farmers

*Prapti Barooah, Muzna Alvi, Claudia Ringler (Natural Resource and Resilience Unit, IFPRI)*

## 1. Introduction

- Indian agriculture is heavily rainfall dependent with > 50 % net sown area rainfed & 78% rainfall located in monsoon.
- With climate change impacting onset of monsoon in India, **farming practices witness a shift.**
- This influences **nutrition and food security** of most rural farming households.
- With climate change impact appearing to intensify, **smallholder farmers face high vulnerability to acute food & nutrition insecurity.**

## Research questions

- What is the relationship b/w access to irrigation facilities & crop diversity?
- How does irrigation access influence household food security in smallholder farming households?



Photo Credit: Shweta Gupta

## Highlights

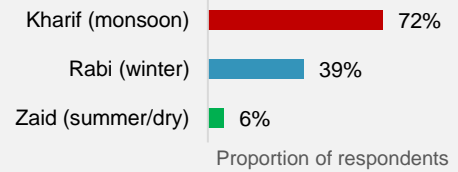
- Access to irrigation is positively associated crop diversity & food security- crucial for small farmers.



Photo Credit: Shweta Gupta

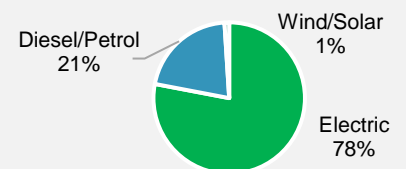
## 3. Results

### Cropping activity by agriculture season



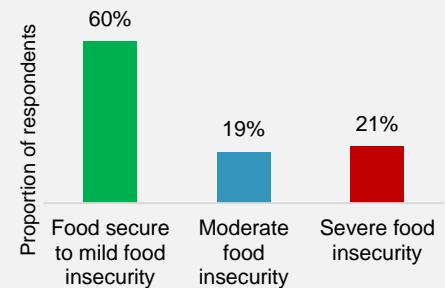
- >80% households are small & marginal farmers (<2 Hectare).
- 41% interacted with extension agent in last one year.

Total pump ownership: 32%



- Farmers prefer cultivating high value crops for increased income.
- Preference for cultivating pulses & vegetables is low across seasons.

### Food insecurity (12 months)



## 2. Method

- Study design:** Clustered RCT to test effectiveness of video.
- Sample size:** 2111 SEWA members involved in household agriculture decision making from 8 districts of Gujarat, India.
- Duration:** Mid-April to early-August 2023.
- Data analysis:** Descriptive statistics and linear regression.



	Food insecurity raw score (0 to 8)	# crops (Kharif)	Grows high value crops (Kharif)=1	# crops (Rabi)	Grows high value crops (Rabi)=1
Owens irrigation pump=1	-0.55*** (0.09)	0.23*** (0.03)	0.1*** (0.02)	0.28*** (0.02)	0.05 (0.03)
Farmer category (Base=Marginal)					
Small farmer	-0.41*** (0.12)	0.2*** (0.05)	0.32*** (0.02)	-0.08** (0.03)	0.29*** (0.05)
Semi-medium farmer	-0.27* (0.14)	0.17*** (0.05)	0.38*** (0.02)	-0.01(0.04)	0.35*** (0.05)
Medium farmer	-0.56*** (0.15)	0.21*** (0.07)	0.43*** (0.02)	-0.07 (0.06)	0.35*** (0.07)
Large farmer	-0.99*** (0.2)	0.29 (0.18)	0.39*** (0.06)	-0.09(0.16)	0.19 (0.19)
Constant	1.58***	0.95***	0.45***	0.33***	0.15***
Observations	2111	2111	1928	2111	846

Robust standard errors in parentheses. \*p<0.10, \*\*p<0.05, \*\*\*p<0.01

Supported by