Factors affecting farmer's decisions for delayed planting of rice and wheat in Bihar, India

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Motivation

Delayed paddy transplanting in Bihar, India

Delayed wheat sowing; reduced rice-wheat output

7 million farmers (80%) exposed to food insecurity

Introduction

RESEARCH QUESTIONS

- What factors influence timely rice-wheat ops in Bihar?
- What's relative importance of key strategies for timely wheat sowing?
- How farmers' assessments of what's likely to help them differ from expert opinion?

STUDY DESIGN

- **Primary survey: N= 2034 farmers rice wheat farmers, 10 districts**
- **Online survey: 27 ag. Experts ((**KVK scientists, private/ govt research staff, extension workers, policymakers)
- **Best worst Scaling experiment**

Fig 2. Farmers doing late operations

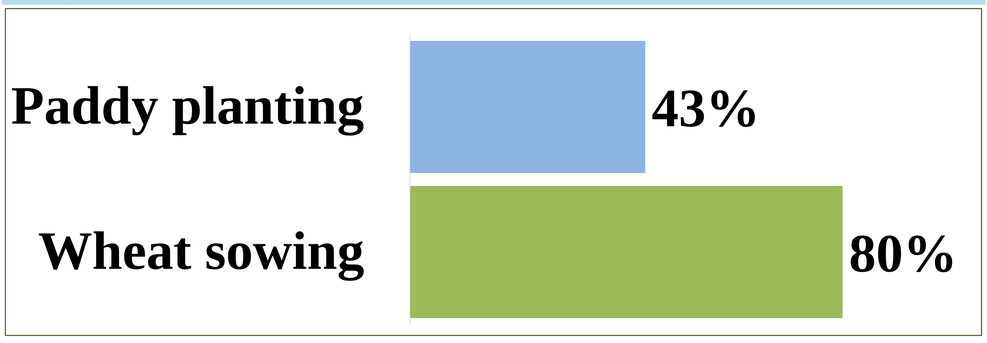
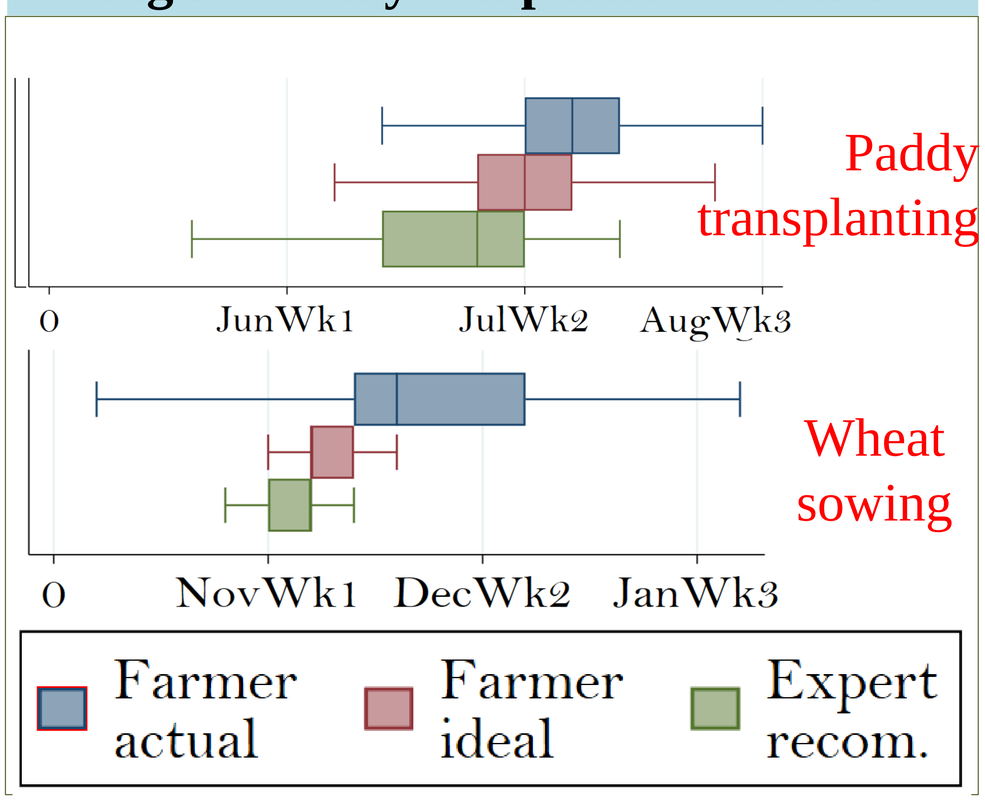


Fig 3. Weekly comparison of dates



Methods: Best- Worst Scaling Experiment

- Method to rank items
- Efficient than other methods

EXPERIMENT DESIGN

- 6 strategies ranked
- 10 choice sets of 3 items each
- Farmer: Randomly shown 5 sets
- Expert: Shown all sets
- Anchor Qn in end for consistency

Fig 1. Strategies to so wheat timely

OBJECTIVE- select most important and least important item for timely wheat sowing, on each set

ECONOMETRIC MODEL

- Random parameter Logit model, with correlated preferences, and controlling for anchor questions

Results

- Differences in rankings b/w farmer and expert (see Table)

Conventional strategies : irrigation, tractor

Expert

Farmer

New strategies: ZT, short duration seed

RPL Model: Relative importance of strategies as depicted by their shares in total utility (Higher share→ higher utility)

	Irrigation	Tractor	Labor	ZT	Seed	Weather
Expert	11%	11%	15%	**26%**	**34%**	3%
Farmer	**24%**	**21%**	17%	10%	13%	14%

Discussion

- Not necessarily a problem of lack of awareness
- Limited scope to experiment/innovate due to independence among farmers
- Persistent wetness in fields, erratic supply of ZT machines, and availability of labor only at select times key reasons
- Need for localized agro-advisories

Work in progress

- Exploring how on-ground factors interact with rankings
- Control for observed heterogeneity (farmer and expert characteristics)

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References

1. Lobell et al. (2012). Extreme heat effects on wheat senescence in India. Nature Climate Change, 2(3), 186–189.
2. Newport et al. (2020). Factors constraining timely sowing of wheat as an adaptation to climate change in Eastern India. Weather, Climate, and Society, 12(3), 515-528.