



Using Data-Powered Agricultural Approaches:

A case study in India

Digital Development Dialogue

28.11.2024 Seminar Summary

How can data-powered approaches support technological change and its measurement in agriculture? In this Digital Development Dialogue, [Gunnar Hesch](#), geospatial data specialist and co-founder of the Data Service Center at GIZ, and [Dominik Naeher](#), Postdoctoral Researcher and Interim Professor of Development Economics at the University of Göttingen, reflected on their experiences and challenges with these approaches. Gunnar shared findings from an Impact Assessment on [CIMMYT](#) Early Sown Wheat (ESW) varieties in India. Dominik contributed to this impact assessment with a talk on complementary information treatment to improve technology adaptation in the future.

Gunnar's analysis highlighted that India - the second-largest global producer and consumer of wheat - faces significant challenges due to climate change. He made clear that the development and adoption of ESW varieties is a crucial coping mechanism to avoid that the crop is exposed to extreme temperatures before harvest. Gunnar and his team identified 1,200 households via satellite-imagery that indicated regions with more intense vegetation in the early-sowing periods. Surprisingly, his study revealed that while 75% of farmers practiced early sowing, only 6% were aware of the specific ESW varieties. A lack of awareness and information emerged as the primary barrier to adoption, with 52% of non-adopters citing this as the reason for their non-adoption or discontinuation. Additionally, misinformation played a significant role; for instance, 29% of farmers incorrectly believed that ESW varieties required specific soil types, further hindering adoption. Gunnar also emphasized that the use of ESW varieties depends on the integration of complementary technologies, such as zero tillage.

Recognizing the challenge of information constraints in the adoption of agricultural technologies, **Dominik's presentation addressed how information interventions could address the low adoption rates.** Specifically, adoption rates were reported to be 7-14% for ESW and 24% for zero tillage, reflecting the varying levels of complexity and informational needs associated with these technologies. While some technologies, like zero tillage, can be adopted with general information, others, such as ESW, require tailored knowledge that aligns with the specific needs of individual farmers and their plots. To test the causal effects of targeted information treatments, Dominik and colleagues currently conduct a randomized controlled trial among 1,200 farmers to assess the effects of general and targeted knowledge, accounting for potential information spill-overs within communities. Endline surveys to assess the outcomes of this intervention are scheduled for April and May 2025, post-harvest. We look forward to the results as these surveys will provide critical insights into the effectiveness of the information strategies and their impact on technology adoption in rural farming contexts.

In the Question & Answers, a participant asked about the long-term effects of the intervention. Gunnar and Dominik stated that while this impact evaluation focuses on short-term effect, a follow-up would be of large interest to see how technology adaptation persists. Moreover, participants were curious about potential tensions among the farmers who did not get the treatment. Dominik and Gunnar made clear that the non-targeted farmers were "compensated" by receiving another intervention and that this way no tensions arose. The alternative intervention was completely unconnected to the ESW and zero tillage treatments to not bias the main trial. Finally, a participant asked about reluctance of farmers and concerns if the intervention's effects remain limited. Dominik answered that during his interviews with farmers, reluctance played only a limited role and farmers were generally open for training.

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