Extended Abstract
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Paper/Poster Title	Access to Information and Agricultural Mechanization– A Spatial Analysis

Abstract prepared for presentation at the 98th Annual Conference of The Agricultural Economics Society will be held at The University of Edinburgh, UK, 18th - 20th March 2024.

Abstract	***200 words max***
In this study, I investigate the determinants of agricultural technology adoption among Indian farmers, emphasizing the critical role of information access and its sources. I use nationally representative data on rural households of India, collected by the National Sample Survey Office, Government of India for 2019, to estimate the effect of access to information on technology adoption. Using logistic regression, I estimate the likelihood of whether a farmer will adopt new farming techniques if it receives information from different sources. I also conduct spatial Durbin linear regression analysis to compute spatial spillovers of access to information on farmers' decision to adopt new farming practices across districts. Findings highlight that the source of information matters in adopting new farming practices. Progressive farmers and input dealers emerge as influential sources. Spatial analysis reveals compelling spatial spillovers, indicating that access to information and the dominant source of information provider in neighboring districts can strongly influence a district's adoption patterns. The findings of this study can help in framing targeted policies to influence the decision-making process of farmers to adopt new farming practices.	

Keywords	Agricultural Mechanization, Technology Adoption, Information Access, Spatial Spillovers
JEL Code	Q15, Q16, Q54 see: www.aeaweb.org/jel/guide/jel.php?class=Q)

Introduction	***100 – 250 words***
Adoption of new farming practices not only empowers farmers with advanced technology to enhance productivity but also offers the potential for increased profits. Extensive research in this field has highlighted the importance of access to information among farmers to adopt new farming practices. Studies have also highlighted spatial interdependence among the farmers. Due to the lack of a nationally representative database on access to information and farmers' adoption decisions, the literature in this field has only focused on primary data sources and RCTs. I aim to extend this literature by using the newly available data on access to information and adoption decisions of Indian farmers at the national level by answering two questions: 1) how important is access and source of information to incentivize farmers to adopt new farming practices? 2) Are there spatial spillovers in the adoption decisions of farmers at a more aggregate level?	

Methodology	***100 – 250 words***

I use nationally representative survey data on Indian rural households for the year 2019 for my analysis. The empirical methodology employed in this study consists of two distinct parts. Firstly, I delve into the household-level decision-making process regarding the adoption of new farming practices. Here, my dependent variable is binary, taking on values of 1 or 0. I utilize logistic regression to estimate the probability of a household adopting a new farming practice in response to changes in the share of farmers with access to information within its district. Additionally, I investigate how residing in districts with different dominant sources of information providers influences the likelihood of adopting these farming techniques. Secondly, I employ a general nesting spatial econometric model to analyze how the share of access to information among farmers within a district influences the share of farmers who adopt new farming practices. This model considers the spatial dependencies that may exist between neighboring districts and how they affect adoption patterns, this includes spatial dependencies in adoption, observed factors and unobserved factors. Furthermore, to estimate the impact of the share of farmers accessing information from various sources on the share of farmers adopting new farming practices, I employ the spatial Durbin linear model. Throughout the analysis, I have conducted a series of specification tests to ensure the validity and robustness of these models.

Results

100 – 250 words

I find that if a farmer were to be relocated to a district with just a 1 percentage point higher share of farmers having access to information, their likelihood of adopting a new farming practice would increase by more than five times compared to if they had remained in their original district. This significant effect highlights the pivotal role of information access in driving the adoption of innovative farming techniques. Furthermore, I find that residing in a district where the dominant source of information is disseminated by progressive farmers or input dealers substantially enhances the likelihood of farmers adopting new farming practices compared to districts where the primary information source is from other channels. This finding indicates the influence of peer learning and expert guidance in motivating farmers to adopt innovative techniques. The presence of progressive farmers and input dealers as information providers likely facilitates the dissemination of practical and relevant knowledge, thus encouraging adoption. The results are robust to using share of farmers getting access to information from these sources. Findings from spatial analysis demonstrate that when neighbouring districts have a higher proportion of farmers with access to information from progressive farmers, input dealers, and electronic media, this exerts a positive influence on the adoption of new farming practices within a given district. This implies that the spread of information and knowledge does not remain confined within district boundaries but transcends them, fostering a culture of innovation and modernization across neighbouring regions.

Discussion and Conclusion

100 – 250 words

This study addresses a significant research gap in understanding the dynamics of agricultural mechanization and technology adoption among Indian farmers. It highlights the pivotal role of

information access and source in influencing farmers' decisions to adopt new farming practices. Additionally, it explores the presence of spatial spillovers in the adoption process, shedding light on how the behavior of one farmer can impact the decisions of neighboring farmers. Findings of this paper can be used by the policy makers to frame targeted policies for the farmers to incentivize them to adopt new farming practices. Various studies have suggested that government needs to intervene to promote agricultural mechanization for sustainable agriculture. Findings of the paper suggests that to promote agricultural mechanization for sustainable agriculture, the government needs to incorporate spatial spillovers effects while farming their policies.