TECHNICAL EFFICIENCY OF RESOURCE CONSERVING TECHNOLOGIES IN RICE WHEAT SYSTEM: CASE OF BIHAR AND EASTERN UTTAR PRADESH IN INDIA

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Introduction:

The CSISA project is jointly funded by the Bill and Melinda Gates Foundation and USAID and is being implemented throughout India, Bangladesh, Pakistan, and Nepal. The RCTs are promoted as a part of conservation agriculture, which is being supported by the project. These technologies are designed to reduce the strain agricultural production has on two critical natural resources: water and soil.

This study aims to evaluate the technical efficiency of farmers engaged in rice-wheat cropping systems in India who are using Resource Conserving Technologies (RCTs) as part of the intervention of the Cereal Systems Initiative for South Asia (CSISA) project.

Objectives:

1. To examine the level of technical efficiency for farmers engaged in rice-wheat cropping systems in Bihar and Eastern Uttar Pradesh.
2. To identify the factors that influence the technical performance of farmers engaged in resource conserving technologies as part of their involvement in CSISA intervention.

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Technical Efficiency

- Rice farmers who were receiving intervention gain in technical efficiency through usage of DAP, participation in seed subsidy program, geographical location, and diversification of crops.
- The determinants of technical efficiency for wheat involves rice farmers are usage of DAP, education attainment, and crop diversification.
- Wheat farmers in the Rabi season who were receiving intervention are found to have usage of DAP, participation in seed subsidy program, geographical location, crop diversification, type of irrigation used, planting in a irrigated lentil field, and manuring in an organization as determinants of technical efficiency.
- The determinants of technical efficiency in wheat involves rice farmers are usage of DAP, participation in seed subsidy program, and crop diversification.

Table 1: Summary of the technical efficiency functions used in the DAP and rice-wheat crop efficiency functions. *p < 0.05; **p < 0.01; ***p < 0.001.

Conclusions:

The use of DAP fertilizer has a positive impact on technical efficiency in all groups. Moreover, farmers receiving intervention from the project are more technically efficient than those who are not. Receiving seed subsidies contributes positively to technical efficiency. The use of a water pump for irrigation as well as planting in an irrigated lentil field are both determinants of technical efficiency in intervention farmers in the Rabi dry season wheat crop. Crop diversification was found to have a positive effect on technical efficiency in all cases except for the intervention wheat farmers. In this case, rice-wheat cropping was a determinant of technical efficiency. This is likely a result of the use of resource conserving technologies. The use of RCTs in the rice season is expected to have a positive impact on wheat productivity. However, further studies will have to be conducted to investigate the impact of RCTs on rice-wheat cropping systems in Bihar and Eastern Uttar Pradesh.