Australian Government
Australian Centre for International Agricultural Research

Change in soil and water dynamics and supporting adoption of Conservation Agriculture in Bangladesh (SACA)

Key details

Location
Bangladesh

Duration

Start Sep 2024 **End** Apr 2029

Budget AUD 3,312,252

Commissioned organisation
Murdoch University

Partners
Bangladesh Agricultural Research Institute; Bangladesh Rice Research Institute; Bangladesh Agricultural Research Council; Conservation Agriculture Service Providers Association; Bangladesh Agricultural University; PIO Consulting Ltd

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Program Soil and Land Management

Project code SLAM/2022/101

Research need

This project aims to examine key constraints to adoption of conservation agriculture, including its long-term impacts on soil and water resources and emergent risks associated with long-term conservation agriculture practice. The results will be used to determine what pre-conditions need to be met, and what approaches are likely to be effective for inclusive out-scaling of conservation agriculture.

The Government of Bangladesh recognises that over the next 2 decades the country will experience rapid and transformational change in the agriculture sector, and that this change will need to be balanced with equitable distribution of development benefits and sustainable management of natural resources.

Conservation agriculture holds considerable promise

for improved food security and agricultural sustainability in Bangladesh, however risks associated with long-term and widespread practice and the key constraints to out-scaling must be understood and addressed.

Researchable constraints include a lack of understanding of the long-term impact of conservation agriculture in rice-based systems, lack of well-proven technologies for establishment of rice under conservation agriculture, the need to improve the reliability and success of conservation agriculture and minimise risks with its on-farm practice in the long term, a lack of proven scaling approaches for conservation agriculture (without project support) and a lack of inclusive access to conservation agriculture knowledge, technologies, and services.

Activities

- Implement intensification of farming systems in Bangladesh to increase food production and achieve self-sufficiency, particularly in rice production.
- Address low organic matter levels, high greenhouse gas emissions, nutrient depletion, and groundwater usage.
- Promote conservation agriculture as a climate-smart approach, demonstrating its benefits in labour saving, reduced input costs, maintaining or increasing yields, and decreasing greenhouse gas emissions.
- Develop a cost-effective and reliable system of rice establishment without puddling soil to encourage wider adoption of conservation agriculture.
- Transition to direct seeding of rice and other non-puddled establishment methods, while assessing the long-term impacts on soil and water regimes.
- Understand the pre-conditions for out-scaling conservation agriculture, learning from previous research, and investigate effective models for inclusive out-scaling of conservation agriculture.

Expected outcomes

- Quantified longer-term effects of conservation agriculture in intensive rice-based systems on soil health, soil hydrology, soil acidification and water balance.
- Risks assessed for rice production due to long-term changes in soils and hydrology in conservation agriculture systems.
- A holistic understanding of the benefits and dis-benefits of long-term conservation agriculture practices in rice-based farming systems.
- A self-sustaining independent entity providing a platform for enabling conservation agriculture out-scaling.
- Evidence base regarding the role of collective action and bundled service provision in conservation agriculture out-scaling.
- Scaling partners better equipped to deliver more inclusive conservation agriculture knowledge, technology and services.