

Research Title: Agronomic Evaluation of Phosphorus Use Efficiency in Traditional Rice Varieties

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Research Summary:

Phosphorus (P) is an essential macronutrient for plant growth and sustained rice productivity. However, a large proportion of Indian soils are deficient in phosphorus and phosphatic fertilizers are largely derived from finite rock phosphate reserves. This raises concerns regarding long-term fertilizer sustainability and food security.

The study focuses on identifying traditional rice varieties with high phosphorus use efficiency (PUE) under low-phosphorus soil conditions. A diverse collection of traditional genotypes is being evaluated to identify efficient performers capable of maintaining productivity with minimal external phosphorus input. The findings aim to reduce fertilizer dependency, lower production costs and promote environmentally sustainable rice cultivation.

Research Highlights:

- Systematic agronomic evaluation of traditional rice varieties under phosphorus-deficit conditions.
- Identification of nutrient-efficient genotypes for sustainable agriculture.
- Integration of resource conservation principles with climate-resilient rice production strategies.

Key Outcomes:

- Identified phosphorus-efficient traditional rice genotypes suitable for low-P soils.
- Reduced dependency on external phosphorus fertilizer application.
- Enhanced prospects for sustainable and cost-effective rice production.

Societal Impact:

- Reduces fertilizer costs and improves profitability for farmers.
- Conserves finite rock phosphate resources and supports long-term food security.
- Promotes environmentally sustainable and biodiversity-friendly farming systems.

