Tropentag, September 9-11, 2020, virtual conference



"Food and nutrition security and its resilience to global crises"

Introducing Citizen Science Approach for Climate Smart Rice Variety Selection by On-farm Triadic Comparisons of Technologies: A Case Analysis of Smallholder Rice Farmers from Kuttanad Region

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Abstract

Temperature increase, rise in sea level and changes in rainfall patterns could lead to substantial modifications in land and water resources for rice cultivation. This will adversely affect the production and productivity of rice crops in different parts of the world. Rice is a staple food of many Indian states viz. Kerala, Tamil Nadu, Karnataka, West Bengal etc. Kuttanad is known as the rice bowl of Kerala and it is one of the major rice-producing areas of the state. The Kuttanad Below Sea-level Farming System is unique, as it is the only system in India that practices rice cultivation below sea level in an area of 50000 ha of land. In order to ensure food security of Kerala under the climate change condition it is necessary to create maximum rice productivity from the available land. In marginal areas characterised by large numbers of smallholders, studies demonstrate the effectiveness of farmer participatory approaches to crop improvement and varietal selection, which address farmers' needs and preferences, are more effective than conventional approaches. Citizen Science (CS) is such an approach to ensure the farmer citizen participation in science and research. In the context of variation in climatic parameters, the proposed study focuses on farmer citizen scientists and they will be provided with existing High Yielding Variety rice seeds that can overcome the climatic stresses and are suitable for their location along with proper irrigation facilities, mechanisation, better storage, effective procurement and timely payment. Therefore, this study will help to identify the variety and the cultivation practices suited for rice farmers of Kuttanad in the changing climatic condition based on their own experience. For this, CS in TRIadic COmparison of Technologies (tricot) methodology can be used with necessary modifications. It will help in demonstrating and popularizing the climate smart variety among the fellow rice farmers in the area. Furthermore, documentation of adaptation strategies among farmers will be one of the lead guidelines for policy makers and researchers for climate smart planning and development.

Keywords: Adaptation Strategies, Climate Resilience, participatory, Vulnerability

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