

Climate-smart Rice Production for Combining Adaptation and Mitigation: Technological Options within the Context of Southeast Asia

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Abstract

Adaptation to changing climatic condition is imperative to forestall dramatic threats to food security, but agriculture is also a source of greenhouse gases (GHG). For most countries in Southeast Asia, rice farming represents a major component in their national GHG budget which is attributed to the emission of methane from (predominantly flooded) rice fields. ASEAN member states have committed, as one community, to improve their capacity to reduce emissions in their respective countries. Climate-smart agriculture denotes a concept to merge adaptation (adjusting to climate change) and mitigation (reducing emissions) into one comprehensive approach. In the case of rice production, improved varieties are the key for coping with climatic stresses such as floods and droughts. In addition to more resilient rice plants, short-maturing varieties can be used to avoid climate stresses by adjusted cropping calendars and also reduce methane emissions due to shorter flooding periods. Crop and water management practices offer many options for CSA. “Alternate Wetting and Drying (AWD)” is an irrigation technique originally developed for saving water and coping with water scarcity, e.g., in El Niño years. This practice also reduces emissions by 30%–70% as has been shown in several field studies in the Philippines and other countries in Southeast Asia. Mechanization has several climate-smart components such as laser leveling and direct seeding that reduce water needs and emissions. This illustrates that the principles of climate-smart agriculture can be aligned with socio-economic drivers.