

REMOTE SENSING-BASED INFORMATION AND INSURANCE FOR CROPS IN EMERGING ECONOMIES (RIICE): THE PHILIPPINE'S EXPERIENCE

Dr Andy Nelson¹, Dr Tri Setiyono¹, Dr Jimmy Quilang², Mary Rose Mabalay*²,
Aileen Maunahan¹, Prosperidad Abonete¹, Arnel Rala¹, Jeny Raviz¹, Roman Skorzus³,
Francesco Holecz⁴, Massimo Barbieri⁴, Francesco Collivignarelli⁴

¹*International Rice Research Institute, Los Baños, Laguna:*

²*Philippine Rice Research Institute, Maligaya Science City of Muñoz, Nueva Ecija:*

³*GIZ*

⁴*sarmap, Cascine di Barico, 6989 Purasca, Switzerland*

E-mail: mrmabalay@email.philrice.gov.ph or mromabalay@gmail.com

Abstract: Monitoring rice crop in the Philippines is essential in attaining food security for the country by reducing vulnerability of smallholders engaged in rice production through an easy accessible rice information system which bid the way for the involved public and private stakeholders to better manage domestic rice production and the risks involved. A key option at hand for the government is to establish agricultural insurance solutions to protect rice smallholders. In the same way, the risks involved in agricultural lending by banks to rice smallholders can be reduced through insurance that protects the farmers' loans against defaulting due to yield losses and thus trigger more investments in agricultural production.

This project makes use of all-weather radar satellite like Synthetic Aperture Radar to generate reliable rice acreage map and integration of remote sensing and crop modeling to predict rice yield. First, the **rice extent map** is generated based on 350 ENVISAT ASAR medium resolution (100m) images acquired from 2003 to 2010 processed using RICEscape® software. This provides a national level basemap. Second, the **actual rice area** is generated using high resolution (3m) Cosmo Sky Med data acquired from June-September 2012 over Leyte processed using Mapscape software. This provides a detailed rice area map during a selected rice crop season, and monitors the rice phenology throughout the entire rice growing season. Third, rice yield information is generated using a crop growth simulation model Oryza2000 that estimates rice yields based on: SAR imagery for planting dates and crop growth rate information; current and historical information on daily weather conditions and soil, and crop management and variety information. These yield maps will be used by RIICE partners to model a yield index which can later be made the triggering basis for an insurance product. Preliminary results of the project in Leyte, Philippines showed a promising result.

Keyword: (RIICE, rice area map, yield prediction, crop modeling)