

Category	: International Rice Research Conference
Select Theme	: Climate change and environmental sustainability
Endorsement email	:
Keyword 1	: Mitigation of climate change
Keyword 2	: Climate smart agriculture
Keyword 3	: Landscape-level interventions
Title of Entry	: Scaling up climate change mitigation strategy from farm to landscape level using Unmanned Aerial Vehicle (UAV) and remote sensing technologies
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Select only one type of presentation	: 15 minute oral presentation
Abstract	: Implementing appropriate mitigation measures to reduce greenhouse gas emission (GHG) is as important as having adequate knowledge on farm management practices before proposing Climate-Smart Agriculture (CSA) strategies. Reliable method in emission estimation is necessary for policy, yet information on actual farm-level emission is inadequate and conducting farm-level surveys and measurements could be costly and time-intensive. This can be resolved by employing remote sensing technology that would facilitates GHG estimation through establishing image indicators to be associated with farm conditions and management practices. Personal interviews with farmers in Banca-banca Sub-district (barangay), Victoria District (municipality) in Laguna Province, Philippines were conducted to verify current management practices and estimate baseline emissions. Using Unmanned Aerial Vehicle (UAV) with autonomous pre-programmed flight path and aerial images capture, time series normalized difference vegetation index (NDVI) data were collected capturing key events such as land preparation, tillering, flowering, maximum LAI stages, and harvest. Data were processed and time series signatures were correlated with baseline information obtained from farm interviews. To scale them up to landscape level (ca. 30 ha), the attributes were implemented accordingly to rice farms where management data were not available. With the baseline information at hand, current farm practices were assessed to GHG emissions and suitable CSA technologies were proposed. Corresponding reduction on GHG based on mitigation recommendations were estimated using SECTOR, a computation tool developed by the International Rice Research

Institute (IRRI). Estimating GHG emission has significant applications in policy and sustainability. A customized mitigation recommendation can be delivered to farmers in terms of optimized fertilizer application, efficient water management, and improved rice cultivars, among others. Mitigation solutions at farm level are cross-cutting actions with parallel benefits such as improving competitiveness, providing a better knowledge of the farms, addressing other environmental challenges. Upscaling could provide guidance to policy-makers in proposing CSA programs for their respective constituency and formulating regulations on keeping the emissions in the farm in acceptable figures.

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