Entry No. IRRC-0109

Category	: International Rice Research Conference
Select Theme	: Sustainable and equitable farming systems
Endorsement email	:
Keyword 1	: Sustainable intensification
Keyword 2	: Advisory systems
Keyword 3	: Sustainable management practices
Title of Entry	: Threat and Treat - Modeling adaptation strategies for COASTAL AGRICULTURAL SYSTEMS vulnerable to climate change-.
Presenting author	: Ando M. Radanielson
Presenting author email	: a.radanielson@irri.org
Co author 1	: Alexander M.Stuart
Co author 2	: Yoichihiro Kato
Co author 3	: Budi Raharjo
Co author 4	: Rudi Eko
Co author 5	: Aris Pramudia
Co author 6	: Indrastuti Rumanti
Co author 7	: Vera Oktavia
Co author 8	: Nasreen Islam Khan
Co author 9	: Zaini Zulkifli
Co author 10	: David E. Johnson
Co author 11	:
Co author 12	:
Co author 13	:
Co author 14	:
Affiliation presenting author	: IRRI
Affiliation 1	: ICRR

Affiliation 2	: ICALRD
Affiliation 3	: University of Karawang
Affiliation 4	: IAHRI
Affiliation 5	: ISRI
Affiliation 6	: University of Tokyo
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Abstract	: Coastal agricultural systems are amongst the most vulnerable systems to climate change. With the existing adverse conditions limiting the production of these systems, developing adaptive strategies requires integrative approaches that can account for key factors determinants of the system productivity. We report here on the results of the combination of participatory research and simulations modeling for two contrasting coastal rice-based cropping systems in Indonesia (West Java and South Sumatra). The objective was to i) identify constraints and opportunities in improving resilience to climatic risk, and ii) quantify expected losses and gains from potential changes in cropping patterns. . Considering the within-site variability, three recommendations domains for a switch in cropping calendar were identified in W. Java while four were identified in S. Sumatra. In W. Java, simulation considering change in cropping pattern from the current rice-rice system to triple-rice cropping suggest that access to irrigation is required to to maximize production. Introducing maize crop in the current cropping pattern (rice rice fallow, main rice sown on January) was predicted with higher total annual production of 21.4% than intensification with three rice crop using short duration variety in one of the seasons (rice-rice-rice) under rainfed system. In S. Sumatra, triple crop was possible by adjusting crop calendar of the main crop from the current date of February to an early sowing in January. A diversified rainfed triple cropping including maize and soybean (main rice crop sown in November) was simulated with similar equivalent rice yield of 8 to 9 t/ha/year as a rice-rice-fallow system with a main rice crop sown in January. With irrigation, the rice maize soja rotation was predicted with a lower water use efficiency about 4 times less than the rice rice fallow. Although temporal and spatial dimensions of these simulations were subjected to uncertainties, this research demonstrates how simulation modeling can add value to the conventional on-farm and on-station research, limited to the area of intervention, by formulating hypotheses of recommendations domains to prioritize interventions.

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