REGIONAL STRATEGY FOR SOUTHEAST ASIA 2020-2025 (SUMMARY)

GOING BEYOND RICE

Transitioning toward equitable, profitable and environmentally sound rice agri-food systems

Lab technician inspecting germplasm of stress-tolerant rice varieties.

INTRODUCTION

Ending hunger and malnutrition in Southeast Asia is essential and rice plays a critical role. Rice is the single most important staple in the region as it provides 50% of calorie intake for its population. The region's rice areas comprise 48 million ha or almost 30% of the world rice harvest. It produced 220 million tons of rice in 2018. Vietnam and Thailand are among the top three rice exporting countries in the world.

Southeast Asia is home to 61 million undernourished people, around 9% of its population, and over 33 million are severely food insecure. The prevalence of stunting in children under five years of age stands at 25% while the percentage of overweight children increased from 3.2% in 2000 to 7.7% in 2018. Achieving SDG2 - ending hunger and malnutrition - by 2030 requires the region to work collaboratively to address complex and interrelated challenges such as climate change, urbanization, biodiversity loss, water scarcity, poverty, food safety and nutrition, and social inequity. The COVID-19 pandemic has exposed the vulnerability of our food systems and agriculture as a whole. Within this dynamic landscape and challenges, IRRI will invest in rice agri-food research taking a landscape perspective and considering the interconnectedness of various systems, e.g., agriculture, land, water, and biodiversity.

KEY CHALLENGES IN SOUTHEAST ASIA

Achieving SDG2 by 2030 requires the region to work collaboratively to address complex and interrelated challenges such as climate change, urbanization, biodiversity loss, water scarcity, poverty, food safety and nutrition, and social inequity. Climate change affects agriculture and food systems adversely due to irregular weather patterns, floods, drought, or natural disasters. Urbanization often means less labor for agriculture in rural areas and changing demands on diets. Coupled with the declining role of agriculture in the region's economy, an increasing number of youths opt for a more luxurious career in the cities. The contribution of agriculture to the region's GDP is 10.3% compared to 33% for services and manufacturing. The future of agriculture will need to respond to all these changes.

INVESTING FOR IMPACTS AND BRINGING CHANGE TO THE LIVES OF PEOPLE

IRRI's vision for the region is to contribute to achieving SDG2 by 2030 through research for development in ricebased agrifood systems. The interim impact that IRRI strives to achieve by 2025 is to increase the sustainability of rice-based agri-food systems through innovation and technology that provide sufficient nutritious rice while preserving landscape biodiversity and providing better income to farmers, women, and youth. Building on IRRI's 60 years of experience, five programs will be implemented.

Regional program 1. Climate change mitigation and adaptation

Southeast Asia is affected by climate change. Drought and floods increasingly pose challenges to agriculture. On the other hand, straw burning, puddled cultivation, and excessive use of water in rice farming contribute to greenhouse gas emission (GHG). IRRI will continue to work on climate change mitigation and adaptation. Key features of this program include: building resilience of rice agri-food systems to various climatic shocks, developing practices to help reduce GHG from the rice farming through the promotion of water-saving technologies such as direct-seeded rice (DSR) and alternate wetting and drying (AWD), supporting governments to strengthen policies and institutions related to climate change, strengthening breeding programs that have targeted climate-smart rice varieties that can cope with abiotic stresses, incorporating gendered trait preferences while



Dr. Chanthakone Boualaphanh and Dr. Phetmanyseng Xangsayasane, Lao rice scientists and breeders.

determining breeding priorities and the dissemination of varieties, etc.

Regional program 2. Food security and nutrition

As staple food for many of the world's poor, rice can be a convenient delivery vehicle for micronutrients that can prevent 'hidden hunger' and stunting in children. IRRI is developing rice varieties biofortified with vitamin A, zinc, and iron. Similarly, research continues on low glycemic index rice, which can become part of a healthier diet for people who have, or are prone to, diabetes. To meet the increasing demand for rice, IRRI will promote the adoption and utilization of highyielding varieties, address losses in the post-harvest value chain by upgrading various technologies, e.g.,



drying and storage, strengthen mechanization and technology adoption, support land consolidation, near real time information systems, develop options to reduce the yield gaps, and work with governments through policy advocacy to prevent further loss of productive agricultural lands.

Regional program 3. Reducing environmental footprints

Agriculture has significant environmental and climate footprints. Supporting countries' national determined contribution (NDCs) and the Paris Agreement on climate change, future rice agri-food systems need to better integrate and preserve vital ecosystem services, lower pollution and address climate change. To reduce environmental footprints from the ricebased agrifood systems IRRI will develop marketdriven and environmentally sustainable options with farmers, promote the transition to environmentally sustainable rice-based agri-food systems for food and nutritional security, support the expansion of welldesigned management practices and cropping systems for optimum yield and long-term environmental sustainability including addressing the issues of transboundary pests, strengthen the crop and resource management practices to improve resource use efficiencies e.g., water and chemical fertilizer including through the introduction or strengthening of market mechanisms (e.g. water pricing) and policy and market incentives. Water-saving technologies and efficient use of water in rice farming will be expanded. Gender equity considerations in sustainable intensification will be central. Using the Sustainable Rice Platform (SRP) indicators IRRI will continue to support sustainable farm practices, expand its research on sustainable rice straw management options and scale-out practices that reduce burning and offer additional income opportunities. IRRI will promote biodiversity conservation in support of CBD Convention and

enhance the quality of the rice landscape by working across sectors to restore ecological functions and rehabilitate degraded ecosystems as part of incomegenerating activities of increasingly diversified and resilient rice-based farming systems.

Regional program 4. Value chains and improved income

Rice-based agri-food systems need to diversify their production systems from their sole focus on rice, which will not reduce poverty in the long run. In certain areas, farmers will specialize in highly productive and high-quality rice production. In contrast, in other areas, farmers will diversify towards higher-value crops. In some areas, farmers will diversify towards rice-fish systems or agroforestry. IRRI will promote the development of sustainable and profitable rice value chains, continue to support capacity development of extension workers and farmers on best agricultural management practices and technologies using a participatory platform, support local entrepreneurship, develop nutrition-sensitive value chains that respond to changing dietary requirements, support farmers in improving decision making and control in technology choices, markets, relevant agricultural policies, and their agroecosystems.

Regional program 5. Women and youth in rice agrifood systems

Women play an essential role in agriculture, food security, and landscape management. However, they tend to have less control of decision-making, lack access to land, credit, markets, and extension advisory services and get paid less. In terms of youth, many of them are no longer looking at agriculture as their first choice of career. IRRI will design and test solutions based on systematic analyses of the context, challenges, and opportunities. Systematic analyses will be conducted on implications of structural and rice



Women researchers evaluating rice varieties during a Farmer's Field Day.

agrifood system transformations in various settings for gender equality and youth engagement. Research will be done to establish the profitability of rice value chain at different nodes in different contexts: design and testing of innovative land tenure and financial models targeting youth; public-private partnerships; creation of an ecosystem of collaboration amongst urban and rural youth to capitalize on urbanization and digital revolution; and generating evidence to understand pathways for engagement and empowerment of youth will be core components of the agenda. Capacity building will be an integral part of this effort. Support to women and youth with vocational training and certification programs could help farmers become more independent and connect to national and international markets. IRRI will be supporting the development of enabling conditions, e.g., policies, incentive systems based on evidence, for their increased participation and empowerment. IRRI will support the development and integration of digital agriculture decision support tools in the rice agri-food systems.

PARTNERSHIPS

IRRI will work in partnership with national governments e.g., through NARES, as IRRI responds to their priorities and needs. Additionally, it will engage other CG Centers under the umbrella of One CGIAR, which will allow IRRI to address common challenges at a landscape level. Further, IRRI has taken the lead in multinational organizations like the Council for Partnership on Rice Research in Asia (CORRA), to create multi-sectoral consortia for private sector partners like the Hybrid Rice Development Consortium (HRDC) and the Direct Seeded Rice Consortium (DSRC). IRRI will also seek partnership with development partners, International Financial Institutions, ASEAN and ASEAN Plus Tree, research organizations, private sector, farmer groups, and other key stakeholders to find solutions for current and looming challenges in the rice agri-food system. One area that IRRI would like to expand is South-South Cooperation, not only within the region but also transferring knowledge and technologies to and from other regions.



IRRI secures the endorsement of ASEAN Member States for ASEAN Rice Net.

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IRRI is a member of the One CGIAR, a global partnership of 15 organizations conducting research for a food-secure future. Other organizations under the CGIAR include Africa Rice Center, Center for International Forestry Research, International Center for Agricultural Research in the Dry Areas, International Crops Research Institute for Semi-Arid Tropics, International Food Policy Research Institute, International Institute of Tropical Agriculture, International Livestock Research Institute, International Maize and Wheat Improvement Center, International Potato Center, International Water Management Institute, The Alliance of Bioversity International and the International Center for Tropical Agriculture, World Agroforestry, and WorldFish.