

CURE Approach amidst Rice Crisis and Changing Climate¹

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The global food crisis, manifested by soaring rice prices and long queues of would-be buyers, has generated various forms of social unrest all over the world. In the wake of these tumultuous developments, a renewed interest in agriculture has surfaced.

As the world “rushes to rice”, the focus tends to be geared toward producing more rice in irrigated, favorable, large, and accessible farms. However, one should not forget how the unfavorable areas would cope. These include the rainfed, upland, drought-prone, flooded and submerged, saline soils, and other problematic areas. They are the topographically, ecologically, and climatically challenged rice-growing places, where rice probably should not be grown, but is.

For a long time, these unfavorable rice-growing environments have not been the focus of rice science investments. They were too diverse and complicated; and after all,

they provided only a small proportion of the total rice supply. The recent rice crisis, however, has produced a great deal of political and media hype. Inevitably, this has made us face a reality unknown to most of us -- that households in unfavorable areas suffer rice crises over a period of several months yearly.

This paper describes the “harvests” from the investments of CURE (Consortium for Unfavorable Rice Environments) in less valued rice lands. CURE has 10 member countries, namely: Bangladesh, Cambodia, India, Indonesia, Lao PDR, Myanmar, Nepal, Philippines, Thailand, and Vietnam.

CURE for Unfavorable Environments

To help households in unfavorable environments reduce rice-farming risks, the International Rice Research Institute (IRRI) and National Agricultural Research and Extension Systems (NARES) offer the CURE project. The project aims to achieve

better “food security for poor farmers in the marginal and diverse rainfed environments in monsoon South and Southeast Asia, through more sustainable and resilient rice-based production systems.”

CURE has shown that unfavorable, diverse, and unpredictable environments are not impossible to address in rice science. Stephen Zolvenski, an anthropologist who did a qualitative assessment of impact in key research sites representing different types of ecosystems, reports on the changes in different aspects of rice farming associated with CURE’s R&D activities.

The ecosystems in the key research sites include: drought-prone plateau uplands; drought-prone lowlands; salt-affected lowlands in eastern India; sloping rotational upland systems in Luang Prabang, Laos; submergence-prone environment in Rangpur, Bangladesh; and intensive upland systems with long growing season in North Cotabato, Philippines.

Common approaches may be applied to address thematic issues identified across diverse study sites. However, resulting technologies are specific to each ecosystem. Some thematic issues which embody the technologies and relevant social, cultural, and economic circumstances include:

- *Germplasm improvement.* *Swarna-Sub I* is a submergence-tolerant variety developed and transferred to Swarna, a popular variety in South Asia. At present, the Sub-I gene has also been transferred to other rice varieties including Mahsuri and IR64. These illustrate examples of how modern scientific tools combined with what is popular locally can be used to arrive at

an improved product that can provide better yields.

- *Rice varietal diversity.* Through field days, CURE allows exchanges of rice varieties among farmers to give them options of what to plant and what works best in their area. Laotian farmers in Luang Prabang, for instance, grow as many as 15 traditional varieties in sloping uplands and seven varieties in the lowlands.
- *Seed and seedling management.* Adhering to the principle that seed quality affects harvest, CURE introduced the concept and practice of clean and healthy seeds, lower seeding rates, and raising quality seedlings.
- *Cropping system enhancement.* In food-insecure and disadvantaged ecosystems, crop diversification is made possible through clever timing and sequencing of crops, which have food and market value.
- *Patterns of labor utilization.* The labor requirement of a particular management practice is a major factor in farmer adoption. For example, in the low fertility uplands of Ubon, Thailand, the traditional farming practice of rice-cutting, though laborious, shows higher yield from the uncut ones. Rice-cutting also reduced weed pressure.

Common Approaches

All project innovations were combined products of the upstream work at IRRI and NARES, and CURE's activities as a downstream platform for testing/scaling out new varieties and practices using farmer-participatory methods. Following an ecosystem paradigm, which takes into account environmental conditions of a specific area, CURE developed technologies suitable for the complex conditions at the research sites.

In terms of improving system productivity, some commonalities emerged from the key research sites studied. This suggests that

even diversity and uncertainty have their common denominators -- in rice, in nature, and in science. These are:

- Continuous work at IRRI and NARES to discover the physiological bases of stress tolerance in rice can be useful in identifying gene markers for breeding tolerant traits into farmers' popular varieties.
- Employing participatory evaluations in researcher-managed "mother trials" and farmer-managed "baby trials" allows farmers to select rice varieties that match their performance criteria.
- Nursery management practices that produce healthier and more robust seedlings should be in place. This way, seedlings are more able to survive and recover from stress after transplanting into the main field and as such, produce above average yields.
- Site-specific tools for weed management and new establishment practices that farmers can adapt should be developed. These should be based on their socioeconomic situations, access to resources, and positions of fields taking into account hydrology, soil type, and nutrient status.
- Improved crop establishment practices combined with early-duration varieties allow for earlier rice establishment and harvest. This, in turn, allows timely sowing of non-rice crops to intensify system productivity, thereby enhancing food security or generating income as a cash crop.
- Combinations of weed and nutrient management practices, coupled with new establishment methods and better germplasm, can result to significant increases in rice production in fragile ecosystems.

Conclusion

In the face of droughts, floods, salinity, sloping uplands, submergence, and other

problems, households that depend on these areas for food practice coping mechanisms based on tradition and farmers' own experimentation to produce rice, albeit at great risk.

CURE attempted to use science in combination with local knowledge and practice to address the diversities of unfavorable environments. By way of generic research, CURE has begun to make a difference. Farmers have also exhibited their own capacities to innovate further on the seeds and management practices developed and introduced to them. A participatory mode of implementation has enabled science and practice to mitigate the negative aspects of unfavorable environments.

The International Research Institute (IRI) for Climate and Society said in its 2007 Report entitled *Climate Risk Management in Africa: Learning from Practice*, "Poor people manage risks, including climate-related risks, regularly as part of their everyday lives. Using as much information as they can get, farmers make decisions that aim to minimize risks and exploit climate opportunities..."

With the threat of climate change looming worldwide, medium and long-term adaptation must begin today with efforts to improve current risk management and adaptation. Lessons from current practices, along with the notion that learning comes from doing, are critical.

In more ways than one, the CURE approach is a prelude to the big story of Climate Risk Management.

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