



A LOW-COST, farm-level dryer is tested at a farmer's house in Savannakhet Province, Lao PDR.

# Working together to save grains

by Martin Gummert

*IRRI plays a crucial role in revitalizing global rice production by engaging the public and private sector in helping farmers reduce postharvest losses*

Even though rice prices have come down considerably since the food crisis in 2008, the fundamentals have not changed. The decline in yield growth across Asian countries, continued population growth, and the conversion of prime rice land to other uses threaten the global rice supply. The immediate challenge is to revitalize global rice production. An annual growth rate of 1.2% is needed to ensure food security. To further boost production, farmers need to reduce yield gaps and grain losses that occur during harvest, storage, and processing of rice.

During postharvest, about 15–20% of the grains are lost because of delays in harvest; labor shortage; unsuitable traditional sun-drying practices, especially in the double-cropping system in which one harvest takes place in the wet season; pests; moisture absorption in traditional open-storage systems; outdated and poorly maintained rice mills that

yield as low as 60%; and drastically reduced head rice.

Moreover, grain quality is also lowered, causing farmers to lose out on income because they have to sell their paddy at a 20–30% discount. Additional income loss is incurred from not adding value to the rice by selling in the off-season at a higher price or by receiving a discounted price because of low quality.

Over the past 15 years, the International Rice Research Institute (IRRI) and its partners have developed and evaluated numerous new harvest and postharvest technologies that are designed to reduce yield losses and improve grain and seed quality. These key technologies are a low-cost paddy moisture meter, quality assessment toolkits, mechanized harvesting technologies, mechanical rice dryers, and hermetic storage systems that provide insect control without using pesticides.

IRRI works with national postharvest stakeholders—national

research institutions and the private sector—to develop and scale out these technologies to farmers. Although there is no standard partnership recipe between the public and private sector, both can collaborate in many ways depending on their objectives and the type of technologies to be used. In recent years, IRRI has seen three successful cases of public-private partnership, which involved joint storage technology development and verification, a transfer of proven drying technologies across countries, and collaboration for technology adaptation and extension.

## Joint storage technology development and verification

In 2000, IRRI evaluated hermetic storage cocoons with a 5-ton capacity in collaboration with the Cambodian Agricultural Research and Development Institute. Results showed that hermetic or airtight storage extends germination from a few months to 9–12 months. This



A TRADITIONAL way of milling rice in the Philippines.

allows farmers enough time to prepare for the next year's planting season. The evaluation, however, found out that the cocoons were too expensive and that farmers preferred individual storage rather than group storage. IRRI then started working with Grainpro (the manufacturer of hermetic storage systems) in 2004 to develop the "Super bag," a hermetically lined bag for a traditional bag-handling system that can store up to 50 kilograms of seeds or grains. Successive participatory technology verification with farmers in villages in Indonesia, Vietnam, Cambodia, and Lao PDR demonstrated that farmers can reduce their seed rate by up to one-third by using the Super bag. In the meantime, commercial seed producers use Super bags (see *Seal of approval* on pages 36-37 of *Rice Today* Vol. 8, No. 1).

## Transfer of proven drying technologies across countries

Research institutions across Southeast Asia have a long history in developing rice dryers—only a few of which were successfully commercialized. Instead of re-inventing existing drying technologies, the Postproduction Work Group of the Irrigated Rice Research Consortium (IRRC)<sup>1</sup>

<sup>1</sup> The IRRC is funded by the Swiss Agency for Development and Cooperation.

<sup>2</sup> IRRC Newsletter: <http://snipurl.com/kz86s>.

<sup>3</sup> This project is funded by the Asian Development Bank.

teamed up with the postharvest group of Dr. Phan Hieu Hien of Long Nam University in Ho Chi Minh City, Vietnam, and organized training on dryers for manufacturers and postharvest technicians from Cambodia, Lao PDR, and Myanmar in Vietnam in 2006. The course focused on simple but appropriate flat-bed dryers with a 4-ton capacity and included field trips to successful dryer users in the Mekong Delta. When they returned to their home countries, the dryer manufacturers built prototypes for demonstration and subsequently released models for commercial use. Now, more than 48 dryers are installed in rice mills and used by farmers' groups in Myanmar, along with 22 in Laos and 7 in Cambodia. By working directly with manufacturers from the beginning, and by providing additional technical assistance for modifications to the dryers based on users' needs, the public sector made a sustainable introduction of the technology with the help of the private sector (see page 6 of *Rice Today* Vol. 5, No. 1).

## Collaboration for technology adaptation and extension

Dr. Myo Aung Kyaw, secretary general of the Myanmar Rice and Paddy Traders' Association (MRPTA), participated in the dryer training

in Vietnam. When he went back to Myanmar, he led MRPTA's impressive awareness campaign on postharvest losses and stressed the significance of increasing rice quality as a basis for improved milling yields; capacity building for farmers, millers, and extension workers on postharvest management; and promotion of newly introduced dryers. Many of the association's activities were conducted in close cooperation with public-sector institutions such as the Plant Protection Division of the Myanmar Agriculture Service.

This case shows that private-sector stakeholders can be good partners in technology development as they can provide extension services to farmers that complement those that the public sector has (see *Ripple*, August 2006, page 8).<sup>2</sup>

Building on these and IRRI's experiences with the Postproduction Work Group of the IRRC and the project<sup>3</sup> *Bringing about a Sustainable Agronomic Revolution in Rice Production in Asia by Reducing Preventable Pre- and Postharvest Losses*, multistakeholder platforms that include public and private players. 🍌

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A MODERN rice mill in Long An Province, Vietnam.