



LAO farmers tend vegetable terraces on the Nam Khan River near Luang Prabang. Improved rice production allows farmers to diversify their crops, and therefore their diet and income—but life throughout Lao PDR, seen in the surrounding photos, continues to depend on rice.



I GENUINELY LAO

THE STORY OF THE PROJECT THAT REVOLUTIONIZED RICE PRODUCTION IN LAO PDR

BY ADAM BARCLAY AND SAMJHANA SHRESTHA

In 1990, the Lao People's Democratic Republic (Lao PDR) needed more food. The rice industry in particular and agriculture in general were ready for change. It had been a long time since the country had produced enough rice—from which the average Lao person receives around two-thirds of his or her calories—to feed everybody. Something needed to happen, and soon.

History tells us that change did arrive that year, along with the Swiss Agency for Development and Cooperation (SDC) and the International Rice Research Institute (IRRI). The Lao-IRRI Rice Research and Training Project aimed to completely revitalize the Lao rice industry. The next 15 years would see an enormous surge in Lao PDR's research and training capacity as well as the long, hard journey to rice self-sufficiency.

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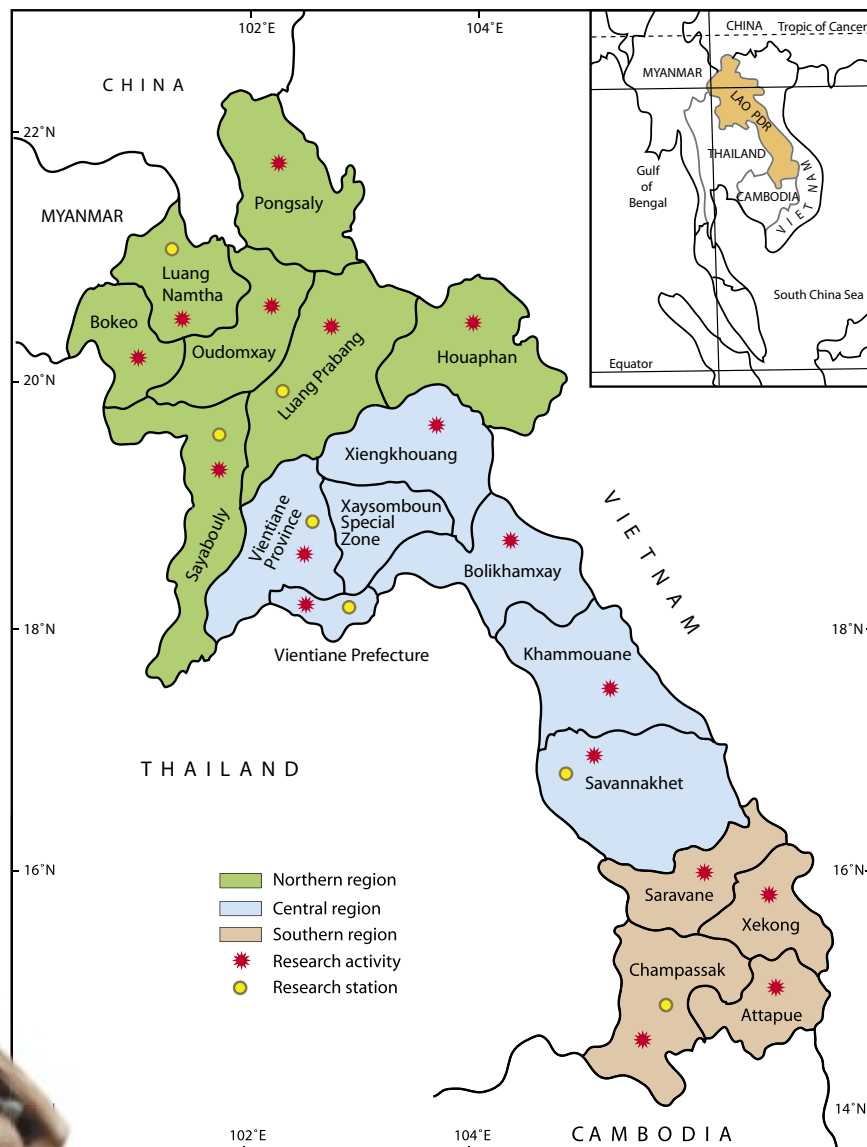


John Schiller, the former IRRI scientist who led the project from its start in 1990 until 2001, recalls the situation when the project began.

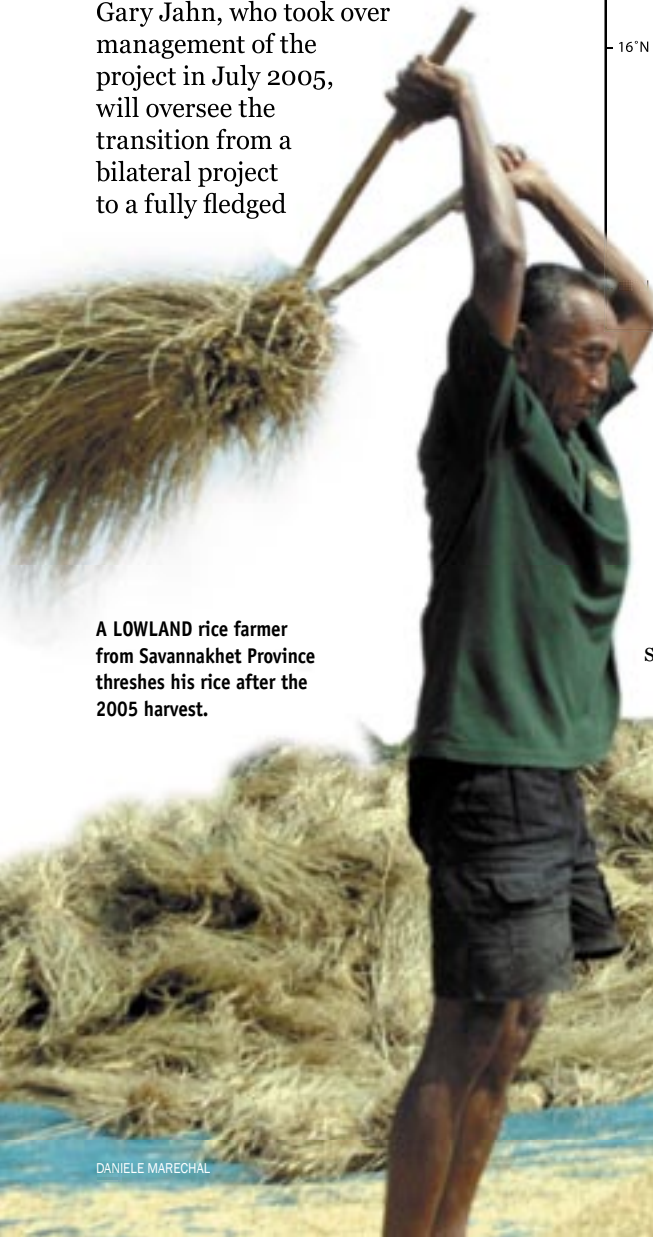
“In 1990,” he explains, “there was almost no research aimed at developing technologies for improving rice production, almost no commercial fertilizer use, and limited rice research expertise.”

After Dr. Schiller left, Karl Goepfert took over project management in 2001-04, followed by IRRI agronomist Bruce Linquist, who arrived in Lao PDR in 1997 and led the project in 2004-05. Dr. Linquist points out that the country’s problems were compounded by a dearth of international aid before the project began. “We were the only ones doing rice research and we basically started from scratch,” he says.

IRRI entomologist Gary Jahn, who took over management of the project in July 2005, will oversee the transition from a bilateral project to a fully fledged



THE LAO-IRRI Project contributed substantially to the development of a functional national rice research system and the establishment of a network of research stations across the country in all provinces.



A LOWLAND rice farmer from Savannakhet Province threshes his rice after the 2005 harvest.

national research program, completely managed and coordinated by the Lao government’s National Rice Research Program (NRRP) under

NRRP director Kouang Douangsila.

How did the Lao-IRRI Project improve rice production and build a national research program? For a start, the timing was good and, as the project began, several key factors converged.

“The government introduced favorable agricultural policies,” explains

Ty Phommasack, the vice minister for agriculture and forestry. “At the same time, IRRI arrived with technologies and know-how and SDC came in with long-term financial support. The government’s support has been a big factor from the very start, and the impact it has had on the Lao rice industry really is unprecedented.”

Dr. Schiller adds that the minister for agriculture and forestry, Siene Saphangthong, who spent time at IRRI as a research scholar and served on the institute’s board of trustees in 1996-2001, strongly supported the project in its early stages, when he was vice minister. “As a result,” he says, “we didn’t suffer a lot of the work-related frustrations that other agencies faced.”

It would be impossible to point to a single measure of success in a project as broad as Lao-IRRI. Statistics, such as the amount of land planted to Lao modern rice varieties—high-yielding varieties developed specifically for Lao conditions from the Lao-IRRI research programs—tell part of the story (see *Growing impact* on page 27).

“At the field level, one of the most obvious impacts has been the release of the improved Lao rice varieties,” says Dr. Schiller. “In the Mekong River Valley in 1990, only 5% of the lowland rice area was under improved varieties. By 2004, many provinces had up to 80% of their lowland area planted to improved varieties.”

The impact of these modern varieties has been profound, playing a huge part in Lao PDR increasing rice production between 1990 and 2004 from 1.5 million to 2.5 million tons. From 1996 to 2004—the period during which technologies were disseminated—the country saw a 79% increase in rice production with a corresponding increase in land area planted to rice of only 39%—and most of this increase was due to double cropping of rice, not clearance of new land. The average annual growth rate in production for the 15-year duration of the project is just above 5% and this increases to more than 7% since 1996. According to Sengpaseuth Rasabandith, head of the Food Crops

Department at the Lao National Agricultural Research Center, “Without the Lao-IRRI Project, there would not have been national modern varieties to release. The project has created a ‘rice revolution’ in the country.”

At the same time, Lao farmers’ traditional rice varieties are not being sacrificed. The project has aimed for a well-balanced development of the country’s rice industry and, currently, around one-third of Lao PDR’s rice-growing area is planted to Lao modern varieties, one-third to other modern varieties (developed in other countries and at IRRI), and one-third to traditional varieties.

While the impact of improved production is unquestionable, Drs. Schiller and Linquist agree that the most significant success has been the growth of Lao PDR’s agricultural research capacity. “You can’t go anywhere in Lao PDR and not bump into somebody who’s benefited from Lao-IRRI,” says Dr. Linquist. “If you’re in the agricultural sector, there have just been hundreds of people who have been trained through Lao-IRRI. Training has been huge.

“Sometimes that’s worked against us—restructuring has moved a lot of people from our program to higher positions because they’ve been well trained. In the long term, though, that’s beneficial because as well as having trainees in the rice area, it filters through to all areas of government.”

Another area where Lao-IRRI has made great progress is that of gender equity. Improved technologies developed by the project are gender-neutral, meaning that male- and



PETER FREDENBURG (2)

BRUCE LINQUIST talks to farmers at a taste test of candidate rice varieties. After tasting, the farmers vote their preferences for eating quality.

female-headed households benefit equally. For example, average rates of adoption of modern rice varieties and subsequent yields are the same regardless of whether households are headed by males or females. Monthathip Chanpensay, deputy director of research at the National Agricultural and Forestry Research Institute and herself a beneficiary of many of the Lao-IRRI training programs, points out that the project also ensured that women had the same opportunities for training as men.

“Qualified women have had an equal chance of being selected in any of the Lao-IRRI Project’s training programs,” she says. “There is no evidence at any level of discrimination in training programs based on gender.”



LAO upland farmers and traders manhandle bags of Job’s tears outside warehouses on the banks of the Mekong at Luang Prabang. Most of the harvest is shipped down the Mekong to Thailand, where it is used to brew beer.



LAO farmer Mai Tamma of the village of Matahe, near Luang Prabang, tells farmers and extension workers at a December 2002 field day how hedgerows of stylo in his upland field control erosion and provide high-protein feed that his pigs love. Because Mai Tamma has paddies suitable for lowland rice, he need not plant his upland field to less productive upland rice.

PETER FREDENBURG (2)

The project has made a big contribution to the conservation of rice biodiversity in Lao PDR. Apart from being an indicator of overall environmental health, strong biodiversity can provide genetic materials for future agricultural use. Lao-IRRI has helped NRRP establish a collection of over 13,000 samples of traditional varieties, document indigenous knowledge regarding traditional varieties, and conserve wild rice varieties in their natural habitat. Lao PDR is also the second-largest contributor to the International Rice Genebank maintained at IRRI.

According to Rod Lefroy, representative of the International Center for Tropical Agriculture in Lao PDR,

“The presence and documentation of rice genetic diversity is of enormous pride to Lao people and this is one aspect of the Lao-IRRI Project that is going to be remembered long after the project has been completed.”

The past 15 years have seen numerous vivid illustrations of the impact that the project has had on people throughout Lao PDR. Samjhana Shrestha, a consultant agricultural economist at IRRI, recalls one of these.

“I visited Naoukhou village in 2002,” says Shrestha, “and I remember the villagers talking in Lao. I couldn’t understand, but I kept hearing this name—‘Sulaphon’—over and over again. It turns out that he’s a

Lao-IRRI-trained agronomist. When he first visited Naoukhou in the late 1990s, it was a very poor village. Now, largely thanks to his efforts, they are self-sufficient in rice.”

As it happens, the rise of Naoukhou happened almost by accident, but stands as an example of the project’s many unanticipated benefits.

“Naoukhou wasn’t a target village,” explains Dr. Linquist. “We chose the area because it had gall midge problems and it was good for screening. But Sulaphon got to know the farmers, who looked at these trials and saw some good stuff. They asked for seed, Sulaphon gave it to them, and ‘boom!’—it just spread.”

Dr. Schiller is adamant that one of the factors in Lao-IRRI’s success was nurturing a sense of Lao ownership.

“I didn’t want it seen as just an ‘IRRI Project in Lao PDR,’” he says. “I often played on the ‘IRRI’ component of the project name. Expressed in the Lao language with the right tones, ‘IRRI’ means ‘genuine.’ You can appreciate the opportunity we had to emphasize that the project was genuinely Lao.”

This ownership can be seen in the way farmers themselves take part in the research, and aren’t merely told what to do by foreign researchers. According to Dr. Linquist, this practice extensively boosted the adoption of new farming technologies.

“We worked very closely with the farmers,” he explains. “Involving farmers in all the steps of research, from analyzing their problems through to finding new technologies, has really been beneficial and has allowed us to get technologies into farmers’ fields.”

Lao-IRRI’s emphasis on capacity building means that, as well as working closely with farmers themselves, project staff have taught Lao agricultural officers to work more effectively with the farmers.

“Traditionally, district advisers and extension agents have just told farmers what to do,” explains Dr. Linquist. “After training district officers, we asked them what sort of benefits they found in working

NEW HOPE FOR UPLAND FARMERS



IMPROVED rice production in the highlands leaves land available for diverse crops.

Rice farming in Lao PDR’s uplands is a backbreaking way of life. The upland environment, where crops are at the mercy of unpredictable rains, is a poor one for growing rice. The farm families who live there tend to be income and resource poor and therefore unable or unwilling to invest adequately in inputs such as fertilizer. Upland rice yields are notoriously low, but most high-yielding modern varieties developed for irrigated systems tend to perform poorly under rainfed conditions.

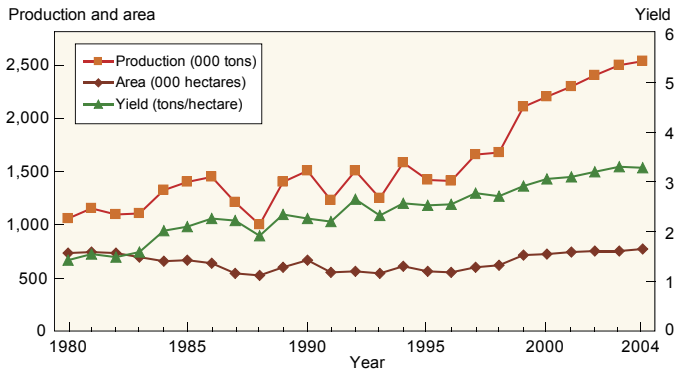
Following the success of an upland farming program in China’s Yunnan Province (see *A mountainous success* in *Rice Today*

Vol. 5 No. 1, pages 30-35), however, things are looking up in the uplands. Now, Lao PDR’s National Agricultural and Forestry Research Institute and the provincial governments of Oudomxay and Sayabouly will work together with IRRI and the International Fund for Agricultural Development (IFAD) to boost Lao upland rice farming in a new three-year project.

Farmers from remote upland villages in Oudomxay and Sayabouly will test aerobic rice production technologies, including high-yielding varieties of upland and aerobic rice—which grow well in dry conditions—from the Lao genebank, China’s Yunnan Academy of Agricultural Sciences, and IRRI.

According to Ren Wang, IRRI deputy director general for research, “We expect a relatively quick impact in increasing rice yields for upland farmers. Not only will this help alleviate poverty, it will also help stop the environmentally damaging slash-and-burn farming practiced in many upland areas.”

As well as introducing higher yielding modern varieties, the project will develop traditional Lao varieties that are resistant to soil-borne pests. Over the next three years, researchers hope to see average rice yields increase from the current 1 ton per hectare to around 3 tons per hectare. Such progress would significantly improve the livelihoods of upland farm families and their communities.



RICE PRODUCTION, area, and yield in Lao PDR, 1980-2004.

with farmers this way compared with past methods. They told us, ‘We used to have to look for farmers. Now farmers are coming to us and asking to work with us.’”

The true success of the Lao-IRRI Project—which is set to end in September 2006—will only be known years from now. But the impact so far has been impressive, with much of the country now self-sufficient in rice. Work remains to be done, though, with the less favorable areas of eastern Lao PDR still suffering from a rice deficit.

But the building blocks are in place. According to Dr. Monthathip, the country now has the ability to continue improving on its own. There is, she says, a confidence that simply didn’t exist 15 years ago.

“The National Rice Research Program is now sustainable,” says Dr. Monthathip. “Even if IRRI went home tomorrow, the rice industry would be OK. But having IRRI involved has many benefits. It helps us network with neighboring countries and international agencies, and it gives us a broad overview that keeps things moving along smoothly.”

“The capacity is there for the future,” agrees Dr. Linquist. “There are strong links established between IRRI and the Lao national partners. The big issue now is thinking of innovative ways to continue the research. But the capacity is there.”

A fully functional rice research system is now a reality in Lao PDR. This includes the establishment of a network of research stations and a well-trained cadre of research scientists and managers. These people are now providing scientific and management leadership to the country’s agricultural research system, which has developed to a stage where it can fully participate in regional research initiatives and networks. IRRI’s faith in Lao re-

GROWING IMPACT

Farm impact

- Farmers who grow Lao modern varieties have approximately US\$42 per hectare—or 20%—higher net returns than those who grow traditional varieties and other modern varieties. Yield improvement is the main reason for increased returns.
- Among surveyed households, 77% were self-sufficient in rice. Self-sufficiency is higher among modern variety adopters (82%) relative to nonadopters (58%).
- Overall, cash income from rice is 77% higher for adopters of modern varieties than for nonadopters.
- Around 80% of surveyed households planted modern varieties on 69% of rice area.

National impact

- Between 1990 and 2004, rice production increased from 1.5 million tons to 2.5 million tons.
- The total investment of the Swiss Agency for Development and Cooperation in the Lao-IRRI Project was approximately \$15 million. The benefit-cost ratio is 7:1—for every dollar invested in the project, the Lao economy is reaping a benefit of \$7.
- The estimated gain in production for 2004 directly attributable to the Lao-IRRI Project is 226,000 to 282,000 tons, corresponding to a value of \$26–32.4 million at the farm-gate price of \$115 per ton.

Institutional impact

- During the early phases of the Lao-IRRI Project, in 1990-95, infrastructure such as access roads, buildings, and laboratories, was constructed and research farms were established. Research and training facilities were constructed in the Lao capital of Vientiane and in other regions.
- Lao-IRRI has established a network of research stations in all 17 provinces, forming part of a functional national rice research system.
- Lao PDR’s rice research and training capacity has been increased through more than 4,600 training opportunities, including higher degree training, on-the-job training, and participation in international conferences.
- The project has fostered collaboration between the national research system and a range of national and international organizations. Project alumni are now the main personnel collaborating with development agencies.

“In just 15 years, Lao PDR has progressed from subsistence rice farming to more intensive production farming,” he says. “With sufficient support, the country will move to the next level of development—commercial farming and rice export. This stepwise approach to the development of rice-based economies has worked well for Vietnam and Thailand.

“The Lao-IRRI Project has effectively nurtured Lao PDR’s research system through its infancy. The system, which now has a critical mass of well-trained scientists and research managers, has reached the point where it can operate effectively on its own.”

This is a tremendous and lasting contribution to national and institutional development that will continue to pay handsome dividends well into the future. 🌾



PANY VANMANIVONG (right), who works for the Lao Agricultural Research Organization, interviews a farmer from northern Lao PDR for a survey on the impact of the Lao-IRRI Project.

SAMJHANA SHRESTHA