

# FROM FIELD TO LAB AND BACK



**Women in Rice Farming Systems**



CGIAR GENDER PROGRAM

# Foreword



The CGIAR Gender Program began in 1991 with funding from the Ford Foundation, the Netherlands, Canada, Norway, the United Kingdom, Australia and the United States. Its objectives are to assist the international agricultural research centers in addressing gender issues by (i) strengthening the use of gender analysis in research aimed at technology development and (ii) improving the conditions and mechanisms within the Centers for promoting the recruitment, productivity, advancement, and retention of highly qualified women scientists and professionals. One of its activities is to make available to scientists and other interested readers materials which further the understanding of gender analysis in research.

This is the second of a set of cases that demonstrates the positive impact of using gender analysis by including women's knowledge and interests as well as men's in agricultural research. Each case is based on work done by scientists from an international agricultural research center (IARC) in collaboration with a national program, in this case 23 national research institutions and three non-government organizations in nine countries.

In the long run, the success of agricultural research is measured by the adoption of its improved technologies and their effectiveness in enhancing food production and human livelihoods. Increasingly it is understood that such success depends on (i) understanding the knowledge, systems and priorities of farmers and users

and (ii) the use of gender analysis to ensure that the knowledge and views of all stakeholders is represented.

This case study of the Women in Rice Farming Systems (WIRFS) program describes how the International Rice Research Institute (IRRI) with assistance from donors has advanced the legitimacy and practice of gender analysis in agricultural research. Pilot research in Carosucan, Philippines, demonstrated the value of seeing and recording what women do as well as what men do. This more complete diagnosis revealed a number of opportunities for the design of useful new technologies which were subsequently tested and many adopted to the benefit of the community. The research also led to generic changes in conducting diagnosis and benchmark surveys.

Focused collaboration with scientists—men and women, technical and social—from national agricultural research systems in southeast Asia has fostered the spread of this methodology and provided wide coverage in Asia of location-specific information on women's and men's roles in crop-livestock production. Furthermore, skeptical scientists at IRRI who earlier saw such a focus on men and women farmers "the work of NARS" with little value for their own work, have turned around on this issue. They are seeing the benefit of gender analysis—for IRRI's work and in their own collaboration with national scientists—for maximizing their scientific productivity.

The scientists associated with the Women in Rice Farming Systems network went one step further than the

use of gender analysis per se. They took the insights gained from using gender analysis to target opportunities specifically related to women's work, enhancing their productivity and reducing drudgery. In each case the whole family benefitted.

Finally, the stories contained here tell how small but well targeted technology improvements can have significant impact on the lives of low resource men and women and their families. These improvements are not measured in hectares of increased yield (though that is also shown) but in incremental changes which move farmers from a meager subsistence, barely getting by, to a level allowing investment choices by men and women for the future improvement of themselves, their children, and their community.

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Michael Collinson  
Science Advisor  
CGIAR Secretariat

Hilary Sims Feldstein  
Program Leader.  
Gender Analysis  
CGIAR Gender Program

# FROM FIELD TO LAB AND BACK

## WOMEN IN RICE FARMING SYSTEMS



### INTRODUCTION

“We have fewer robberies now!” A hint of a smile lights the weathered face of Alfredo Garcia as he looks up at the electric light standards that now line the only street in his village. “We had waited many years. I remember well the day the electricity came,” he says. “It was in June, 1993. The whole village celebrated!”

Garcia is a farmer who lives in the village of Carosucan in the central Luzon region of the Philippines. Just a few kilometers to the south, richer, irrigated fields produce two rice crops a year, with farmers taking full advantage of the miracle rice varieties of the “green revolution”. But the people of Carosucan have no irrigation. A hundred and eighty families, mostly tenant farmers, work fields fed only by rain. They harvest just a single rice crop a year. Life was never easy in Carosucan and if the rains failed it was impossible. For years, more than a third of the men moved the hundred and sixty kilometers south to Manila right after the harvest to look for other work. They left their families behind for months at a time. Garcia used to do that. “I went to Manila and worked as a carpenter,” he says, remembering the old days. In fact in the old days things were so bad that many men actually left for Manila while the rice was still maturing to get a head start earning cash.

But life has changed for Alfredo Garcia and the rest of the men and women who farm in Carosucan. The electric lights are perhaps the most obvious symbol. After all, the villagers of Carosucan value family safety and reduced street crime just as highly as do people in the big cities of the world. Many other facets of life have changed for the better too. Farm families now have higher incomes than ever before. Village farmers managed to save enough capital to start a cooperative. It lends money to its members at lower interest rates than they could get from the bankers, who only saw these farmers from rainfed areas as bad risks. The coop now has forty-two paid up members, of whom ten are women.

Women have more income than before and much of the painful drudgery of their lives has been eliminated, giving them more time to work at generating other family income, giving them more quality time with their children, letting them take a larger role in the management of the farm. Today many of Carosucan's families can afford to send their children to high school, even college. They are healthier. They have been able to buy refrigerators to keep food from spoiling and with more money coming in they can afford a higher quality diet. And some farmers, like Alfredo Garcia, have even been able to save enough money to buy their own land.



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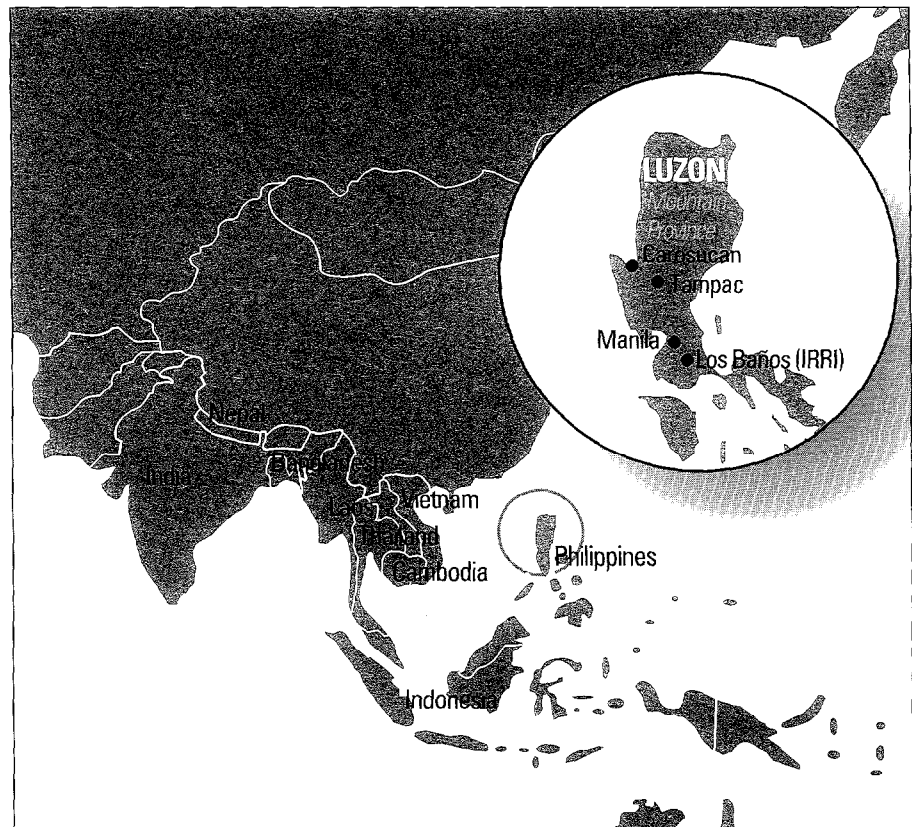
All this happened to the little village of Carosucan because scientists took the time to think of the farm as a complete system and they considered women and what they did on the farm as well as the men. Since 1986 the farmers of Carosucan have proven the value of careful "gender analysis" in farming systems research. And they have demonstrated to all, that technology is not necessarily gender-neutral and when it is targeted to specific beneficiaries, everyone can win.

Carosucan was the pilot site for an innovative project to test the idea that gender analysis—isolating and quantifying what members of a household do in terms of farm and family labor by gender—could be more than a way of finding out "who does what". Over its ten year history, the Women In

Rice Farming Systems program at the International Rice Research Institute (IRRI) has shown that gender analysis can be a valuable analytical tool to help identify technologies that improve productivity, increase farm incomes and reduce the pain and drudgery of farm life, especially for women in the rice growing regions of Asia.

It has also left a long-term impression on the importance of gender considerations in research with many scien-

tists, both at the home institution, IRRI, and in the national agricultural research programs of the member countries of the Asian Rice Farming Systems Network (ARFSN). Many of them have institutionalized gender analysis in their own programs. And finally the Women In Rice Farming Systems program has, through its own training and outreach, enhanced the awareness of women's needs in agricultural extension and training services throughout the region.





Indian woman  
drying seeds

## CHALLENGING FAULTY ASSUMPTIONS

**T**he Chinese say “Women hold up half the sky”. It’s a statement about equity and responsibility, yet recognition of that fact has come very slowly to the field of agricultural research and technology development. When they look at what happens in the fields, researchers, technicians and agricultural extension workers see but often do not look beyond what they see. To them ten women and two men in a farm field means two farmers and ten women working. The work women do, no matter where it is, doesn’t count. If the work goes unpaid it is “house-

work” and if it’s paid then it becomes simply “farm labor”. Neither term recognizes the true value of the contribution women make to the food producing capacity of Asia.

Yet women are major participants in farming activities in the rice growing regions of Asia. In Indonesia, Thailand and the Philippines, women provide up to half the total labor input in rice production. In India and Bangladesh, women, landless and poor, do as much as 80% of the work. They usually pull the seedlings for transplanting and do the transplanting. They weed the rice paddies and join in the harvest. When the

crop is in, they handle many of the post-harvest activities, including managing and storing seeds for the next crop. On top of that they are usually responsible for threshing and milling the rice that the family itself will eat and they grow other crops and raise livestock on the farm. And as Dr. Suharni Siwi, an Indonesian entomologist working in Integrated Pest Managements points out, “Women are often the most important decision makers in the household.” They may manage the household cash, decide which food supplies and which pesticides to buy.

The role women play in rural life in Asia is only growing in significance with the rapidly expanding industrial economies of the region. The lure of jobs in urban areas draws men off the farm, leaving women completely in charge.

Nevertheless, scientists accustomed to working in the isolation of the lab, assumed that people, let alone their sex, had nothing to do with their science. A plant pathologist studying bacterial infections in rice seeds was happy to solve the scientific puzzle of how the disease spread from grain to grain. There was neither time nor inclination to think about how that knowledge might be used or who might use it on the farm when it came to selecting seeds to sow for the next rice crop.

That clear and narrow focus on specific questions, which many scientists consider a great virtue, extends all the way down the agricultural technology system, from research to training to extension services. But a training program for farmers on seed management is not much use if the only people invited are men, when women do all the seed preparation on the farm. Yet that is exactly what has happened in the past. How could such mistakes be made?

When trying to understand the deep rooted problems of poverty in rural farming systems, even social scientists tended to confine their surveys and analysis to the heads of the households, whom they implicitly assumed to be male. They rarely separated the data they gathered by gender or by age. It's easier to talk to a single spokesperson for the family. Surely, they thought, decisions, family needs, ideas about improving the future could be articulated perfectly well by the head of the household on everyone's behalf. Researchers also assumed that any technology that would help a male farmer would be good for the farm, good for the family.

This is the climate in which the Women in Rice Farming Systems program of the International Rice Research Institute was born.

## HISTORY OF THE WIRFS PROJECT

To address such concerns, in 1983 the International Rice Research Institute (IRRI) organized a conference of scientific, policy and donor communities. Scientists from twenty-seven nations participated. They discussed women's roles in rice farming and looked at whether or not women had benefited from new rice technologies such as increased mechanization or the improved rice varieties. Two years later, at a follow-up meeting in Bellagio, Italy the members of the Consultative Group on International Agricultural Research (CGIAR) agreed gender issues were relevant in agricultural research, and in particular in the research of the member centers. In response, IRRI

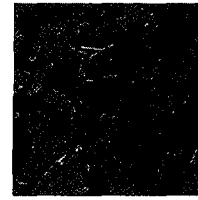
was the first of the sixteen international centers to implement a proactive program—the Women In Rice Farming Systems program (WIRFS). It was to be the framework on which women's concerns in both research and extension programs on rice farming systems could be built.

By 1985 IRRI and the national agricultural research arms of sixteen governments had joined the Asian Rice Farming Systems Network to conduct farming systems research. IRRI made the Women in Rice Farming Systems Program an integral part of that network, rather than making it an isolated program. "We felt that separating it would not be in the best interests of the national systems," says Dr. Fernando Bernardo, IRRI's Deputy Director General for International Services. "Because if you separated it, then it will be a network of women. Our intention was to institutionalize gender concerns in existing research institutions and existing research institutes are manned mostly by men!"

Getting the program off the ground meant dealing with the existing prejudices of the predominantly male research community. IRRI asked Dr. Gelia Castillo, a noted social scientist to help set up the program. "You know this was not an easy thing to initiate," she recalls. She developed a strategy for approaching male scientists. "I found that if you went to the



Winnowing rice, another women's task



scientists and talked about their technology, rather than starting with women right away, you were better off." That strategy worked with some at IRRI, but there were others who had serious doubts about the gender program. Dr. Prabhu Pingali, an agricultural economist who now heads IRRI's Irrigated Rice Program, was very critical and very vocal about the initiative. "I felt what was being done didn't have enough scientific direction to it," he says. "Now I was not critical about studying gender issues. But I was critical about some of the ways in which it was being done. I felt that it was very much sort of collecting data on how hard women work and that they lead such hard lives, and that was it." In many ways Castillo agreed. "Because you cannot just let this thing remain at the ideological level," she says. "Gender makes a difference and if you cannot show them that, then why in the world would anyone bother?"

## APPLYING GENDER ANALYSIS

What the Women In Rice Farming Systems program hoped to demonstrate was that careful gender analysis would actually help agricultural scientists and engineers identify appropriate technologies and potential interventions that they would otherwise have missed. The effects of such technologies could be measured for their impact not only on women farmers, but on the entire farming system. Through the design, testing and evaluation of new technologies to meet needs uncovered by gender analysis Dr. Castillo felt the program could prove that gender really did make a difference.

Thelma Paris, the current coordinator of both the Asian Rice Farming Systems Network and the Women In Rice Farming Systems program, was involved from the beginning. She says that the attitudes of some scientists

and engineers were astonishing. For example IRRI's Agricultural Engineering Division had developed many labor saving machines for farmers. But they invariably concentrated on the things male farmers did on the land. With encouragement from the Women in Rice Farming Systems program the division began to design machines that could ease the drudgery of tasks done by farm women. When the division designed an ultra-light transplanter to reduce the backbreaking labor involved in transplanting rice seedlings, the division head invited Thelma Paris to try it out. Her pleasure at seeing the machine soon turned to dismay. "He asked me if he should color the machine pink," she laughs. "I thought he was just joking, but he said he would like to color these machines, to give them a sort of feminine touch!"

What the Women In Rice Farming Systems program needed was a model project—one that would demonstrate to everyone that gender analysis which pointed to areas where new technologies might make a difference, really did work.

## THE CAROSUCAN STORY

**W**hen the Women In Rice Farming Systems program began, scientists at IRRI had already been using the emerging discipline of farming systems research to learn more about the impacts of various farming components on productivity and income. While the systems approach went a long way to help develop more productive and appropriate technologies for farmers, it often failed to recognize the economic contributions made within the farm system by farm women. So one of the first areas addressed by the Women In Rice Farming Systems project was to develop the methods for incorporating gender analysis and women's concerns into a farming systems research approach.

In nineteen eighty-six the WIRFS team selected an existing Asian Rice Farming Systems Network site in the central Luzon region of the Philippines for a pilot project. Two years earlier, scientists from IRRI, in collaboration with the Department of Agriculture and Institute of Animal Sciences at the Los Baños campus of the University of the Philippines, had undertaken research there to determine the viability of various rice



**Parboiling sticky rice  
for rice cakes**

byproducts and other crops which could be grown in conjunction with rice as livestock feed. Dr. Cesar Sevilla, a livestock specialist at the University of the Philippines, says the project was a natural part of the evolution of the work done by IRRI, the lab that had started the green revolution. "Originally the project was a continuation of IRRI's multiple cropping project," he says. "They thought why not integrate animals since animals are an integral part of the farming system. One of the major objectives of the project was to develop the methodology for doing crop-animal research on farms."

The researchers were particularly interested in lowland, rainfed ecosystems, a difficult environment for profitable rice farming because only one rice crop could be grown per year. Carosucan fitted their needs perfectly. Alfredo Garcia qualified to be a farmer cooperators for the project. "The scientists came and did a big survey," he says. "I was selected because I met the qualifications. I had one carabao and one cow." A carabao is a type of water buffalo common throughout the Philippines. Alfredo Garcia and his seventeen farmer-cooperator compatriots had two other things in common. All were willing to let the research team use some of the land they farmed and to a man they were all men.





The original crop livestock research team conducted a detailed survey at the beginning of the experiment to establish the parameters of the Carosucan farming system. They interviewed male farmers about their land, their animals, their income, their families, their access to resources.

One curious facet of Carosucan life the benchmark survey uncovered was that forty percent of the farmers in the village allocated some of their land to a local variety of sticky rice. The survey found that the rice was grown for processing into a special form of rice-cake, a local delicacy. But

#### **Women raise smaller animals such as swine**

that was as far as it went. The crop-livestock research team didn't consider the glutinous rice especially significant to their project. "It's very seasonal. It's just during the All Saints Day," says Sevilla, referring to the fact that the rice-cakes were made to be sold during the period immediately preceding All Saints Day at the end of October.

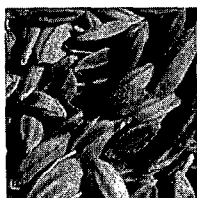
Something else the scientists noticed but ignored was that when they held meetings to discuss their project with the farmer-cooperators, women often

came instead of men. Cesar Sevilla was not surprised. "I think its very typical throughout the country. Women have a say in decision making. They were probably delegated by their husbands. One fourth or more of attendance at our meetings was women, even though all our cooperators were listed as men."

And there was something that happened during one of the experiments that really puzzled the scientific team. Most farmers had Leucaena (or Ipil-Ipil) trees growing in their fields. Since one goal of the crop-livestock project was to find ways to increase farm efficiency by using locally available materials as animal feed the researchers recommended to their farmer-cooperators feeding the edible leaves of the Leucaena to the carabaos and the cows. However, they discovered that the farmers had not carried out the trial. The disappointed scientists wondered why.

That was the situation in Carosucan when Women In Rice Farming Systems joined the project.

Thelma Paris, a social scientist at IRRI, was the Assistant Coordinator of the Women in Rice Farming Systems program. She went through the original survey questionnaires. "I found that they were only collecting information related to large animals, not



on swine or poultry," she says. Farm women, not men, raised pigs and chickens. They had discovered long ago that Leucaena would cause their sows to abort. It was the women who had stopped their husbands from adopting the Leucaena as a cow and carabao feed in the mistaken belief that it would cause abortions in pregnant cows as it did in pregnant sows.

Another technology that the crop-animal project scientists recommended was the use of rice bran as a feeding supplement for the cows. But rice bran was already being used by the women to feed the swine. "Once the technicians left, the wives gave this rice bran to the pigs. So the researchers' proposal proved not feasible for feeding cows," says Paris.

She then did her own independent study in Carosucan, including a gender analysis. That involved finding out how various members of Carosucan's families allocated their time; who did which tasks; what the value of those tasks was. "We had to really understand the use of resources within the households and whether there was a conflict in the use of resources, particularly when they are scarce," says Paris. "Because we used to assume that whatever resources are available in the family, men and women will have a sort of equal use. But when it's scarce it's either men's or women's. Then it's a question of who actually decides about its use."

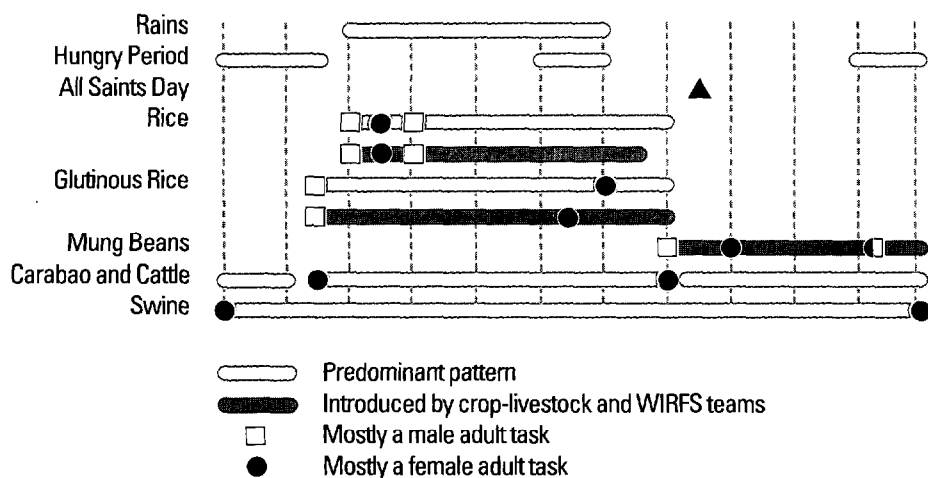
Among its findings, that survey showed the importance to the village



Electric street light  
in Carosucan

## CROP-LIVESTOCK CALENDAR, CAROSUCAN

MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC JAN FEB



economy of the special glutinous rice that some of the farmers grew. The new study showed that the sale of the processed glutinous rice accounted for 97% of all income from crops during the month of October. It amounted to \$310 US per household, a substantial amount for these poor families. The farmers used that cash to tide them over until income from the sale of their main crops started to come in. Women in the village devoted themselves to processing as much of the glutinous rice as they could into "Durumen", from which it could be made into rice cakes for the All Saints Day festivities. The original survey had noted the existence of the glutinous rice but had not even quantified how much land was being used in glutinous rice production. "The plots were small, so they thought it was not an important component of the farming system," says Paris. "If they had paid attention to women's activities, they might have realized the significance."



The Women In Rice Farming Systems survey quantified something any one who visited Carosucan in September and October couldn't help but notice. Around the clock the air was filled with the incessant sound of rhythmic pounding as people, mostly women, beat then winnowed the glutinous rice to remove the hulls. To a visitor like scientist Cesar Sevilla it was a very pleasant sound. "It's nice. It's 'toom, toom' all over the valley you hear that sound 'toom toom'." But for the women who were making the sound it was anything but pleasant. "They don't sleep at all. They have to pound as much as they can during the peak season when the demand and price are high," says Thelma Paris. All the stages of the processing were done by hand, mostly by women.

"We used to use a traditional kind of rice that we burned before pounding,"

#### Transplanting rice in India

says Pacing Junio, a grandmother who first learned to process the rice as a child. "Then we switched to 'Imelda' rice and colored it black with charcoal. The hand pounding meant it took five people to pound one sack in one day." But the people of Carosucan clearly believed the payoff was worth all the effort. In fact the survey showed the processing was so profitable they would even buy glutinous rice from other villages to increase their output of Durumen.

That knowledge led the WIRFS team to look for technologies that might take advantage of glutinous rice processing to increase incomes. IRRI had developed an improved variety—IR 65—which was higher-yielding and matured faster than 'Imelda', the name local people gave to the glutin-

nous variety they had been growing. If it was acceptable to the women as a substitute for Imelda rice, it could increase the total amount of glutinous rice available for processing. They wouldn't have to buy supplies from other villages and the earlier maturation would lengthen the season for producing the Durumen, providing income in September as well as October. This was the first example the Women in Rice Farming Systems program had of a potential technology identified out of gender analysis. The farmer-cooperators in the original crop-livestock experiment who had been growing glutinous rice were asked to test IR 65.

Alfredo Garcia remembers the first time he planted the improved rice. He had one plot of the traditional rice and one of IR 65. To his eyes the improvement was obvious long before the rice was ready for harvest. "There were more 'pregnant' tillers. I had twenty-five to thirty for the IR 65 versus sixteen for Imelda," he says. "Yet I used exactly the same inputs and no insecticide on either." Now he sows a quarter of his land with IR 65.

Pacing Junio watched the experiments with the new rice with interest. Junio, who has lived in Carosucan all her life, is a tenant farmer with a hectare and a half of land. She works it with the help of hired labor. At sixty-seven years of age she can't do a lot of the heavy work herself any more. She was not one of the participants in the experiments, but when she saw the results she switched to IR 65 as well. She says she now gets much higher

yields and likes the sticky texture of IR 65, though she still grows some of the older variety as well. Some customers say they prefer the smell of 'Imelda' rice. Today eighty percent of the farmers of Carosucan grow IR 65.

The community adopted improved varieties for their main rice crop too. The result was an earlier harvest for all the rice, both glutinous and non-glutinous—up to thirty days earlier. Not only did that improve cash flow, it left enough time for the farmers to plant a second crop. So the crop-live-stock team suggested growing mungbeans. Today more than ninety percent of the farmers in Carosucan plant mungbeans after the rice harvest.

More income was welcomed by all in the village, but the drudgery and plain hard labor of the glutinous rice processing remained. In fact with more rice to process, the women in the village had to work even harder than before. Every stage of the process—the threshing, the careful par-boiling, the dehulling and the winnowing—was done by hand. There wasn't a machine to be found.

This gave the Agricultural Engineering Division at IRRI a chance to develop machines that might improve the efficiency of the processing and reduce the backbreaking drudgery that the women endured every year. They looked at each stage of processing and tried several different machines to make the process more efficient. Several technologies proved unfeasible, unable to compete with nearby

commercial rice mills. Since the volume was relatively small, the engineers focussed their attention on dehulling the glutinous rice. They designed a small dehulling machine which could do in a few minutes what had taken several women hours to do by hand. It eliminated most of the need to spend hour after hour hand-pounding the rice to remove the hulls.

Yet Pacing Junio was surprised when the engineers first came to the village with a prototype of the hulling machine. "Why would they come up with that machine?" she asked "The pounding works. It has been a tradition." Like so many women she had taken the pain and drudgery of pounding the rice as part of her lot in life. Before she saw an alternative she had never thought to complain. The benefits of the new machine were quickly obvious. Where before five people would hand-pound for a whole day to process a single sack of rice "Now we can make five sacks in a day, even if just one person is working," says Junio. Reduced drudgery for the women turned into profit for the farmers' cooperative. In the last nine days of October, 1994, for example, the dehuller made nearly 2,000 pesos (\$80) for the organization.

The women in the community formed a group to manage the dehuller and helped the engineers improve the machine. They actually wanted an electric motor to power the machine to make it easier to maintain, but since the village didn't have electricity



Using the microrice mill

at the time, it was out of the question. But it did spur the village on to press for electrification and to find the means to pay for it.

Today you will still hear the sound of rice pounding in the village of Carosucan, but only for the final stage of processing. The drudgery is gone. And Pacing Junio, who ten years ago wondered why anyone would need such a machine, wouldn't give it up for anything. "I'd like to keep the machine," she insists. "There are not many left who have the strength to pound the old way. The men are getting older and I am getting older," she laughs. As for Alfredo Garcia, he's sold on gender analysis. As a man he and his family benefited too. After three years of using the improved rice varieties, increasing the proportion of land devoted to glutinous rice and adding a second crop of mungbeans after rice he was able to save enough money to buy his own farm. Now he's



sending his children to college and he no longer needs to spend time working as a carpenter in Manila to earn extra money to make ends meet.

Pacing Junio says she too is better off now than she was before. She has used the extra income to hire more farm labor to work her land. Other families have bought refrigerators and television sets.

Not all the new income comes to the village from the improved rice, the mungbeans and the dehulling machine. Many children have left Carosucan, having already decided that there was no future on the land. Rapid industrialization in the Philippines has begun to encroach on the farmland near Carosucan. Farms are smaller, but there are new factory jobs close to home for people who had once worked on the land. Also, many of the village's young women have moved overseas to be domestic servants and caregivers. They send money home to support their parents. But much of the money does come from the changes the gender analysis and technology development helped bring about. And because of it, for those who have chosen to stay, the option to be a farmer in Carosucan is not as bleak as it used to be.

## THE MILL

Scientists with the Women In Rice Farming Systems program have applied the methodology first tested in Carosucan to other rural rice farming systems in Asia. Each system is unique and solutions that work in one area may be totally inappropriate in another. Problems are different and gender roles and activities are different. Without the gender analysis methodology, innovative solutions to important rice farming problems might never be found.

## A SMALL SOLUTION TO A MOUNTAIN PROBLEM

The people of the mountainous regions of the Philippines, such as northern Luzon's Mountain Province, had a problem that was easy to recognize. An inadequate transportation system over the difficult terrain made it difficult and expensive to get rice to a mill once it was harvested. For the women of the regions, who are responsible for the family's food supply, the problem was a serious one. They needed a way to mill relatively small amounts of rice, just one or two cavans (fifty kilos each) for family use. Many commercial mills were reluctant to accept such small amounts of rice for milling. Milling is the final stage in rice processing after threshing and dehulling. Milling removes the bran from the rice kernel and grinds it slightly to leave a shiny white grain ready for cooking. In the absence of

easy access to mills, women were forced into the backbreaking labor of hand-pounding their rice to prepare it.

Using gender analysis in the upland farming systems, researchers from IRRI and Philrice, the Philippines Rice Research Institute, had identified the problem. The agricultural engineers assigned to the project had some ideas about solutions. Artemio B. Vasallo was an engineer at IRRI at the time. "We had seen a small, manual rice mill from England. We tested it and found to be too labor consuming," he says. "So we had an idea to put a small motor on it." At about the same time the Women In Rice Farming Systems project had been looking to China for potential technologies that might be useful for women in other rice-growing countries. The team found a small portable rice milling machine that already had a gas motor on it. This "microrice mill" or "micro mill" might have been just the solution the engineers had been trying to develop on their own so they bought one and brought it back to IRRI.

The engineers arranged to take the mill to some of the mountain villages to see what people thought of it. "We were not sure it was the size that could be adapted," says Vasallo. "So we demonstrated it to families in areas where a need was demonstrated. We asked them 'Based on this machine, what are your suggestions for improvement?'" The first response was overwhelmingly positive. But the machine was not perfect—at least not in the eyes of the women who would

have to use it. They felt the mill was just a bit too "micro" that it should be capable of milling more rice. They also wanted an electric motor on the mill. They felt it would be easier to maintain and operate. Using the women's ideas, the engineers were able to build a much improved micro mill based on the Chinese design but incorporating the improvements the women had suggested. Eulito Bautista another engineer who was at IRRI at the time, is proud of the work. "It was the first technology intentionally designed for women," he says. "That's why we left the electric motor. Even children sometimes use the machine." Soon the research project had become a development one. The microrice mill was introduced to other isolated

Handpounding rice in the highlands of the Philippines



mountain communities. The results were similar. Now Philrice in the Philippines is encouraging the manufacture and sale of their design. In some communities it is finding uses the engineers had never thought about—for grinding coffee beans, processing beans and even corn.

## HIJACKING THE RICE MILL

The women in the village of Tampac II-III were way ahead of the scientists and engineers. They knew what they needed the moment they laid eyes on it.

The name Tampac comes from a word that means 'on high ground'. You hardly notice high ground when you drive the dirt road past the scattered houses that make up Tampac II-III. Like so many small villages in the central Luzon region of the Philippines it sits amid hectare after hectare of flat land divided into a patchwork quilt of rice fields. Some are irrigated and produce two crops a year. Some rainfed fields produce only one. But the folk lore says that years ago, when heavy rains flooded the area, the village at Tampac survived because it sat on high ground. It may only have been an extra meter above its surroundings, but the name has stuck. Like the farmers of Carosucan a bumpy two hour ride away, Tampac's residents are tenant farmers who have little chance to own the land their families have worked all their lives. "Of course we'd like to

own," says Milagros Galapon, one of the women farmers of the village, "But our only chance will be from the government's land reform program."

The farmers of Tampac II-III sell most of rice crop they grow but they each keep some for themselves for food. And that's where the women of Tampac had a problem. The closest commercial rice mill was in the town of Guimba, seven kilometers away. But getting to Guimba cost money and time and took a lot of effort. Motorized tricycles or power tillers with a trailer attached, known locally as "kuligigs", were the means of transportation. But poor road conditions, especially during the rainy season limited the trips women could take. The women typically would load two cavans onto the kuligig and ride to the mill. It cost five peso's each way, which in a poor town was a substantial amount of money. But the women had no option.

"We had to go to the town to have our paddy milled," Lourdes Vidal, one of the farmers explains. "We felt it was a waste of time and it's expensive because we have to wait for transportation. And when we arrived, if there were already ten bags there ahead of us, we had to wait. But we didn't complain."

"Even if we complained, there was nothing we could do," her friend Lourdes Fiesta adds. Or so they thought. Then one day everything changed for the women of Tampac II-III.



It was the day they “hi-jacked” the microrice mill.

Philippines scientists associated with the Asian Rice Farm Systems Network had started working with the villagers of Tampac II-III to see if conditions were suitable for them to grow mung-beans as a second crop after the rice harvest on the farms that were not irrigated. As part of the program, members of the Women In Rice Farming Systems team were doing a survey to assess the various gender roles in the community. As it happened, this was the same team which was working in the Mountain Province of Luzon.

The research team was on its way to the north with a prototype microrice mill for the women of northern Luzon to test and evaluate. But Tampac II-III was on the way, so the team stopped to do some work there. The microrice mill was sitting in the back of the IRRI truck when Lourdes Fiesta and Remedios Bernal, two of the women who farmed in Tampac, spotted it. They asked what it was and for a demonstration. Immediately they realized that the microrice mill could work wonders for them. “We wanted to have that machine so we would waste less time,” Lourdes says. The request surprised Lina Diaz, the IRRI social scientist who was working with

both the women in Tampac and the women in the mountains. “We never thought to bring the microrice mill to these people. It was more for the northern communities where they do hand-pounding,” Diaz says, but the women of Tampac II-III were insistent. “They didn’t want to let us go without leaving the machine behind. I had to promise I would bring another one.”

## NO MACHINE AVERSION HERE

**P**ractically overnight the village of Tampac II-III became a test site for the microrice mill technology. It was close enough to IRRI and only a few kilometers from Philrice, to let the engineers from both organizations interact directly with the women using the mill. That closeness and the feedback the women provided resulted in many improvements to the design. For example, the town mill always separated the fine bran from the rice hull. The microrice mill didn’t do that “We knew how to do it with a screen,” says Artemio Vasallo one of the design engineers now at Philrice, but they hadn’t thought of it. The fine bran was only important to the women. “We are in charge of the pigs because our husbands take care of the large animals.” Milagros Galapon explains. The fine bran made a very good, no-cost, feed for the pigs. The installa-

tion of a separating screen, a larger hopper, wheels, all at the suggestion of the women, made the microrice mill a much more useful and usable device and demonstrated to the engineers that women were not as “machine averse” as they had thought. “It’s right for us to comment if the engineers are not right,” Tampac farmer Lourdes Fiesta points out. In fact the women of Tampac had almost exactly the same suggestions as the women in the mountain region for improving the rice milling machine. Vasallo learned a lesson from that. “We have to know their needs, their activities, what consumes most of their time and then decide what is needed,” he says. “It should be that way, rather than the other way—think of a machine and then introduce it.”

One feature that the women noticed and appreciated while testing the portable mill was that it actually produced about 3% more polished rice for the same input when compared to the commercial mill in the town. That may seem like a small difference, but a large family may consume fifty bags of paddy or unmilled rice a year. Three percent is like getting an extra bag and a half for free. Of course as often happens with machinery there was soon pressure from husbands to get their hands on the mill themselves, but the women of Tampac held firm. “We talked to our husbands,” Lourdes Vidal says. “We told them you work in the fields. We work the machine.”



## IT WORKS BUT IS IT WORTH IT?

One of the questions the researchers needed to address was the economic viability of the mill. Could it be price-competitive with the commercial mill, or at least close enough in price that the women would still prefer it to taking the long and expensive trek to town? It was immediately clear that a single farm family would not be able to afford the machine and would not need full-time use of it. So to operate the mill, the women themselves formed an association. They elected officers and decided among them who would operate the mill. The association set the milling fees and wage scales for the operators. They ran it like a small business. Being organized into a group has had another impact on Tampac. It has brought the community together. "When we were not formed in a group there was no cooperation in the community," says association member and farmer Letty Castañeda. "That has changed." For example the association uses some of the milling fees it collects to provide small loans to the women of the community in times of need.

The WIRFS team has continued to monitor and collect data on the economic viability of the microrice mill enterprise. The association in Tampac II-III intends in the long run to save enough cash to buy their own microrice mill. In the meantime they intend to hang on to the test model they practically hi-jacked. The six month period they had to evaluate the original mill expired years ago.

## HOW WIRFS WORKED

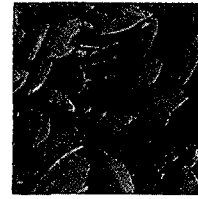
The whole idea behind the Women In Rice Farming Systems program was to work hand in hand with the national agricultural research systems or other institutions in the partner countries of the Asian Rice Farming Systems Network to help them include gender analysis and attention to women-specific opportunities and constraints as part of their regular agricultural research programs. The WIRFS coordinator at IRRI acted as a hub, providing expertise, guidance and direction for the program and helping develop research methodologies.

The pattern of interaction and learning usually unfolded in the following manner. The WIRFS and ARFSN coordinators would identify a partner organization in a country. That organization would appoint a WIRFS coordinator. The national WIRFS coordinator and other researchers would be invited to a WIRFS conference (one held every two or three years) and would present papers on women in agriculture in their country. Usually these first papers gave a general view of women in agriculture in that country. For example, that women in the Philippines, on average, do 50-75% of the work in rice farming and do 40% of the work in mungbeans. This general information did not provide guidance to agricultural researchers as to what specific technologies would be useful. Researchers with a longer association with the program would also present

papers at the conference. Their papers described research which did use gender analysis and included the experiments initiated as a result of that analysis. For example, that for a particular area, women are predominantly responsible for transplanting, weeding, and postharvest processing of the rice crop whereas men were responsible for land preparation and harvesting. Such specificity would help scientists target particular operations for productivity-enhancing technologies.

Part of the conference would be spent in workshop format discussing the tools and approaches to using gender analysis. At the end of the conference, several of the new researchers would be encouraged to write a small proposal for adding a gender analysis component to their current research. The Women in Rice Farming Systems program provided small grants to fund that component and the results were reported at the next WIRFS conference. The grants became an incentive for researchers to actually use their new knowledge. Additionally, WIRFS gave small grants to the national coordinators to run their own WIRFS workshops for their colleagues. And always available was the coordinator who would help with national workshops, assist individual scientists with developing their research protocols, and provide feedback to ongoing activities. She also attended every Asian Rice Farming Systems Network meeting to report on the WIRFS program and discuss its most recent research. The mix of conferences, workshops and small grants,





coupled with the active outreach of the WIRFS coordinator kept the network expanding. Simultaneously, researchers' understanding and use of gender analysis deepened.

Funding for this ambitious and dynamic process came from a variety of international government and non-governmental sources. Funding from the Ford Foundation initiated the WIRFS program and supported it throughout. This support plus funds from the Danish International Development Agency, the International Development Research Centre, the Canadian International Development Agency, the Swiss Development Corporation and the Hunger Foundation supported the small grants program, the workshops and capital purchases like the first microrice mills. IRRI itself contributed the salary of the WIRFS coordinator from the core budget for the entire period of the project.

Many observers see WIRFS as a model for future work in other parts of the world. It showed what can be accomplished with a strong institutional base and limited but strategically used resources.

## LONG TERM IMPACTS

**"I**'ve changed the minds of two of my earliest critics!" Thelma Paris laughs when she talks about two of her colleagues at IRRI. Originally skeptical of the program, they have now become allies and have even co-authored papers with Paris. It's a very tangible sign of success. Within IRRI and the national agricultural research organizations of the rice growing countries of Asia the overall impact of the Women In Rice Farming Systems program has been significant.

Over its ten year life, Women In Rice Farming Systems was never a program on its own, but instead operated under the umbrella of the Asian Rice Farming Systems Network. Now the ARFSN itself has been terminated and although many member countries have decided to establish their own "association", the question of the viability of a commitment to gender sensitive research rises again. Dr. Mahabub Hossain, the head of IRRI's Social Sciences Division says that the Women In Rice Farming Systems program provided a boost to the national research programs and worries that momentum will be lost. "You need a catalyst from here," he says. "It's not that we have been doing research on our own. What we did is basically give the support to our colleagues in national systems so they could do the research."

But IRRI's Deputy Director General for International Services, Dr. Fernando Bernardo, is confident that ground won't be lost. He says one of the original goals of the Women In Rice Farming Systems program was to reorient the national institutions of the rice growing nations of Asia so they would take gender concerns seriously. "And this happened," he says. "That is something we are proud of." Thelma Paris, the coordinator of the program in its last year agrees. "Our role was to facilitate and provide leadership and methodology. Now the methodology is there. I'm confident that they can do it by themselves."

People working in the national programs echo some of this enthusiasm, but also sound notes of caution. "We have begun to get recognition, but we have not done much to actually change the national research system," says Benchaphun Shinawatra. She is a lecturer at Chiang Mai University in Thailand. The problem, she says, is that Thailand's Farming System Research Institute, the focus for gender-sensitive research in the country, was disbanded in a reorganization of the national agricultural research program. "Instead we have eight regional offices and the people who were in the Farming Systems Research Institute are now dispersed into these regional centers," she explains. "So I think we are still struggling in terms of our impact." Supat Viratpong an economist in the Office of

Agricultural Economics in the Thai Department of Agriculture says, "We've tried to put gender into our development plan. Even though the Farming Systems Research Institute is gone, research is still being done in the Office of Agricultural Economics." Shinawatra is optimistic that in the long run the new structure will be conducive to more farmer-oriented research and that gender will not be forgotten. She also sees important progress in two other areas. "We have much better impact in the universities, which cooperate with the regional centers and also the national agricultural extension system has a much better recognition of women's roles, not in research, but in the way they transfer technology, the way they work with women," she says. "It's much better since our (WIRFS) effort."

## A PRACTICAL EXAMPLE

**K**ong Luen Heong, an entomologist at IRRI, has seen firsthand the impact the Women In Rice Farming Systems has had in Thailand. He was working on Integrated Pest Management training programs with the Thai extension services. His first visit to Thai farming villages surprised him. There didn't seem to be any men. "We went to several villages where we only found women. Here we had these women showing us how they spray, who was spraying and telling us all the great



Indonesian women  
spraying pesticides on  
soybeans planted after rice

things about spraying. And we came back to discuss about the problem and we said where are all the men?"

The answer was a revelation to all the scientists. In Thailand male farmers have been leaving the farm to take on jobs in the newly industrializing economy. Women left behind on the farm are now assuming roles that men had traditionally played. That includes applying the agrochemical pest controls to the rice crop.

This observation prompted the team to enlist the help of Thai scientists working with the Women In Rice Farming System network to conduct a survey. Its aim was to find out in detail to what extent women took care

of pest management in the region, and more importantly to assess their knowledge base and attitudes toward pest control. "The basic information that came back was the knowledge base was very low," says Heong.

"Women farmers tended to overestimate pests and sprayed very unnecessarily and very frequently only had obtained a series of instructions from their husbands. 'On such and such a day you spray. Buy this and go spray. That's what you do'."

The survey also discovered that women who applied sprays knew they could be dangerous. Many women reported they had headaches or other symptoms of illness after they sprayed. But few had heard of the potential of long-term chronic effects of continued pesticide exposure. They rarely wore masks or other protective clothing.



Most of the women had never taken the extension courses offered by the Thai department of Agricultural Extension which had been given to men. But when asked if they wanted training more than 90% of the women said they were not interested or had no time for training.

“There’s a perception problem of what training is,” says Heong. “Training means sitting in a classroom and being instructed and means long hours of listening to instructions and having to study.” And that was the last thing the women wanted to do when they had other important farm and family responsibilities. Heong says it left the Thai extension services with a dilemma. “We have to train these people, but how can we redesign the curriculum so that it will attract them to training?” The solution designed by two Thai extension workers was a participatory program with little lecture, no classroom, and a lot of on-farm experiments activities and demonstrations. Heong says they made one more important decision that helped overcome the bad feelings the women had about training “There was an important decision made,” he says. “Let us not call the training, training. Let us call the training a meeting.”

The original program was designed as a one day activity, but it was so successful that the women themselves have asked to meet on a weekly basis

to discuss other on-farm problems with the extension services trainers. Heong and the other scientists involved in the Integrated Pest Management program now realize that working with the women farmers will probably have more long term, beneficial impacts than training the men. “Women farmers tend to be more receptive to new ideas,” Heong points out. “Men tend to be more dogmatic. Women are more sensitive to the health effects of spraying. To the men we would say ‘Aren’t you afraid of health?’—‘Oh no I’m strong!’ would be their reply.”

Thai extension services have now designed an innovative, gender-sensitive program in Integrated Pest Management training. But there was another impact from the experience. IRRI entomologist Heong gained a new appreciation. “I would say that because we had a gender program it definitely generated a lot of awareness. I would not have been so much aware and concerned.”

Like Thailand, Indonesia sees more and more women taking on all the responsibilities of farm operation. Dr. Suharni Siwi, an entomologist who for a time coordinated the Women in Rice Farming System activities in Indonesia, believes that the program has had a long-term impact. “We have already institutionalized the study of women in all the universities in Indonesia,” she points out. As for the

national agricultural research system itself, Siwi is less optimistic. “We have to work slowly,” she cautions. “Male scientists are not very concerned. But we are seeing improvement, especially at the decision making levels in the Department of Agriculture.”

One of the most profound changes has occurred in Philrice, the Philippines Rice Research Institute. The very close association with IRRI, with researchers and engineers moving between the two organizations has given a direct injection of gender concerns into its programs. It was Philrice engineers who took on the development of the microrice milling machine and who now take pride in their leadership in gender specific technologies. “Now we interact directly with the farmers,” says Philrice engineer Eulito Bautista. “We think this is better. We are exposed directly to the people who are going to use a machine, so we get to know their needs.” Significantly, Bautista worked at IRRI before joining Philrice. But the impact goes beyond Philrice. Dr. Agnes Rola is an economist at the University of the Philippines. She had for a time been the coordinator of the Philippines component of the Women In Rice Farming Systems program. “One of the lessons I learned—it’s a very nice one—from the WIRFS experience is the fact that even now, without WIRFS, in all of my research I have incorporated women’s labor. What are their activities? What are

their needs? It's a way of life for me. That's institutionalization!" Dr. Betty del Rosario the Deputy Director for Research and Development at the Philippines Council for Agricultural Resources Research and Development says that the Women In Rice Farming Systems program started at just the right time in terms of political developments in the Philippines. The government of President Aquino tried to enhance the position of women through its Women in Nation Building Act. "I think the Women In Rice Farming Systems Program really made a contribution," she says. "It showed us that there is such a tool as gender analysis, so women's concerns can be addressed properly."

## OTHER IRRI IMPACTS

**A**t IRRI itself the presence of the program has clearly had lasting effects. But Dr. Fernando Bernardo does not give his institution passing marks in all areas. "I would not give it a very high score," he says. "Gender issues are strong in the Social Science Division and in Ag Engineering. In the other divisions, not much."

Nevertheless, some scientists have changed the way they look at the world and their own research profoundly over the period of the Women in Rice Farming Systems project. You couldn't find a better example than Dr. Tom Mew. His specialty is studying plant diseases. It's what he loves. Today he concentrates on the diseases

that infect rice seeds. He believes he has a sure way to reduce rice seed losses ten percent by spotting diseased seeds early. Years ago that would have been enough for Tom Mew—to collect and analyse his data and publish his results in a scientific journal—but not today.

By working with the social scientists who did the gender analysis work, he learned that in most of the rice growing regions of Asia, women maintain the seed for next year's rice crop. Tom also learned that his knowledge about seed diseases was useless if he couldn't pass it on to those women in a way that was useful to them. He says that a decade ago that would never have occurred to him. The way he looks at his research today is different.

## ABOUT IRRI

**T**he International Rice Research Institute is one of history's most shining examples of a pressing problem finding a solution just in the nick of time. The research center was founded in 1960 next to the Los Baños campus of the University of the Philippines. The government of the Philippines provided the land, the Ford and Rockefeller Foundations provided the cash.

The mission set out for IRRI couldn't have been clearer at the time. Population projections showed that the people would soon outstrip the capacity of the world's farms to feed

them. The most important crop on the planet was rice. Eaten by nearly everyone rice was the primary source of calories for half a billion of the world's poor. But unlike the cereal crops of the developed world—wheat, corn, oats or barley—rice had received little attention from plant breeders. The scientists at IRRI had to find a way to make the land produce more rice—a lot more rice. If they failed the world faced mass famine and starvation. It was as simple as that. Researchers and plant breeders at IRRI began a crash program to breed a better rice and in 1966 released IR 8 a new, higher yielding rice variety that also matured more quickly—allowing two crops a

year on fertilised and irrigated land. They had in six years found a way to double the world's production of rice. The so-called "green revolution" saved millions from starvation. In fact George Rothschild, IRRI's current Director General says, "There are six hundred million people alive today who might not be here if it weren't for IRRI."

IRRI is one of sixteen international agricultural research centers which form the Consultative Group on International Agricultural Research (CGIAR). IRRI's prime responsibility has been the improvement of rice to feed the poor.



“More and more you realize that research is not the issue. The user of the data is sometimes more important and the user of the technology may not necessarily understand the same things you do. I started to realize that’s an important part of the research that I had never been involved with in the past.”

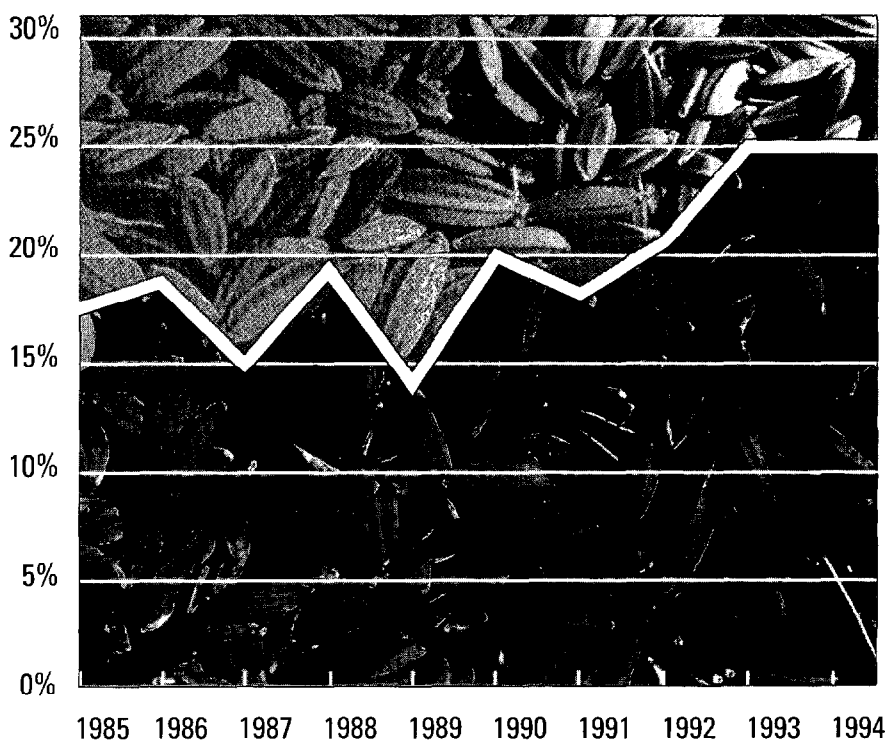
As part of its over all strategy, IRRI made a conscious decision to try and redress gender imbalances in its own training and give public recognition to women scientists. Over the ten years of the program, the proportion of women who have gone through IRRI training programs at all levels from group training right to doctor-

ates has risen from seventeen percent in 1985 to twenty-six percent in 1994. In addition, IRRI has developed training programs to teach researchers how to incorporate gender analysis into their own work. “I think the main impact of the gender project is in the number of scientists trained in gender concerns,” says Abraham Mandac, an assistant scientist in IRRI’s International Programs Management Office. “There is now a sizable corps of scientists in the region who have an appreciation of the idea of gender and can carry out research.” In fact, between 1991 and 1994 twelve men and forty-nine women graduated from IRRI’s course in Gender Analysis and Its

Application to Rice Based Farming Systems at IRRI and fifty-five men and fifty-three women from in-country courses in India and Bangladesh between 1991 and 1995. Forty-nine scientists—46 men and three women—graduated from the Farming Systems Training Course which fully integrates gender into the research methods being taught.

To encourage young women in the region to consider careers in agricultural research, IRRI has instituted a special awards program which recognizes the achievements of outstanding young women scientists in rice research. Since 1990, fourteen women scientists have received awards from IRRI.

## WOMEN IN IRRI TRAINING PROGRAMS 1985-1994



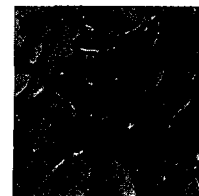
# Conclusion

The Women In Rice Farming Systems program has pioneered in linking gender concerns in farming communities directly to technology design. More importantly, the flesh that the program put on the term has advanced gender analysis. Until the Women in Rice Farming Systems program, concern for the work of women farmers had been confined to asking the questions "What do women do?" and "How long does it take to do?" And that's as far as it went. Social scientists had their statistics. They could show the true workload that women bore in a household—both their income generating labor and their expense saving, unpaid labor. The WIRFS program has moved ahead by asking "Who does what and when?" and the further



question "So what?" What are the directions for research and technology design that the new knowledge suggests? Is the goal to reduce the level of physical labor and drudgery that women have to shoulder? Is it to increase their ability to contribute to family income? Is it to find means to give them more independent income or to have a larger say in family decisions? By knowing and analyzing who does what in the farm system, researchers have been able to see whether technologies can be developed and whether or not all the impacts of new technologies will be positive. That is the essence of innovative research, research that will lead to more food and better livelihoods for low resource farm families.

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# NATIONAL AGRICULTURAL RESEARCH ORGANIZATIONS INVOLVED WITH WIRFS

## **Bangladesh**

Bangladesh Rice Research Institute

## **Cambodia**

Cambodia-IRRI Country Project

## **India**

Indian Council of Agricultural Research

Narendra Deva University of Agriculture, Faizabad, Eastern Uttar Pradesh

Central Rainfed Upland Research Station, Hazaribagh, Bihar

Indira Gandhi Agricultural University, Raipur, Madhya Pradesh

Holy Cross Vocational School, Hazaribagh, Bihar (NGO)

## **Indonesia**

Central Research Institute for Food Crops

## **Laos**

Department of Agricultural Research and Extension

## **Nepal**

Institute of Agriculture and Animal Research

Chitwan Farming Systems Research and Development

Integrated Agriculture and Rural Development Center,

Bharatpur, Nepal (NGO)

## **Philippines**

Philippine Rice Research Institute

Bureau of Agricultural Research, Department of Agriculture

Institute of Animal Sciences, University of The Philippines Los Baños (UPLB)

Center for Policy and Development Studies, UPLB

Farming and Resources Management Institute-Visayas Agriculture,

State of College of Agriculture, Baybay, Leyte

Farming Systems and Soil Resource Institute,

Central Luzon State University, Munoz, Nueva Ecija

National Commission on the Role of Women in the Philippines

International Rural Reconstruction Institute, Cavite (NGO)

## **Thailand**

Farming Systems Research and Development

Kasetsart University

Chiang Mai University

Khon Kaen University

Prince of Songkla University

## **Vietnam**

Cu Ulong Rice Research Institute, Omon District

Cantho University, Omon District



