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▲JIRCAS Tsukuba Headquarters in early spring (Photo by S. Uchida)

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JIRCAS
JAPAN INTERNATIONAL RESEARCH CENTER FOR AGRICULTURAL SCIENCES

Science in the Service of Poor Farmers:
The CGIAR-JIRCAS Partnership

Ian Johnson
Chairman, CGIAR
& Vice President for Sustainable Development, The World Bank

Introduction

Cutting poverty in half by 2015 is a major challenge facing the international community. A focus on science-based agricultural development offers huge benefits. First, more than 75 percent of the world's poor people depend on agriculture for a living. Second, agriculture is the predominant sector in the economies of most developing countries, and a principal source of employment. Third, agriculture is integrally linked to the environment through the use of aquaculture, biodiversity, forests, land, livestock and water resources. Science-based agricultural development has a track record of delivering real benefits to poor farmers through new crop and farming technologies that improve productivity, increase farmer incomes, and help protect the environment by using natural resources more prudently. Science-based sustainable agriculture offers the best hope for millions of farmers to escape poverty, essential for achieving the Millennium Development Goals (MDGs).

Japan-CGIAR Partnership

Japan joined the CGIAR in 1972, soon after the alliance was created. The Japan-CGIAR partnership spans over three decades, is strong and fruitful, and rests on a solid platform of mutual cooperation and commitment to mobilizing science for development. Japan is one of the major supporters of the CGIAR. The Japan-CGIAR partnership embraces research and knowledge exchanges, strong research-for-development partnerships with a range of Japanese advanced research institutions, universities, and specialized agencies such as Japan International Research Center for Agricultural Sciences (JIRCAS), Japan International Cooperation Agency (JICA), Japan Overseas Cooperation Volunteers (JOCV), Nippon Foundation, among others. A distinguished group known as "Friends of the CGIAR in Japan" functions as an informal sounding board, providing valuable advice on ways to strengthen our partnership.

Japanese scientists have played key roles in CGIAR, providing scientific, technical, and managerial leadership. A recent snapshot of the partnership shows a Japanese scientist leading the International Maize and Wheat Improvement Center (CIMMYT), 17 Japanese experts currently serving on the Boards of Trustees of CGIAR Centers and the Science Council, and dozens of scientists and researchers working at the CGIAR Centers. At the system level, Japan has exerted a strong leadership role in the CGIAR Executive Council, and most recently represented the Asia-Pacific group of countries including Australia and New Zealand.

In 2004, thanks to the generous support of its 63 members including Japan, CGIAR will have invested over $400 million, the single-largest public goods investment in mobilizing science for the benefit of poor farming communities worldwide.

Examples of CGIAR Impacts

Some of the remarkable achievements of the Japan-CGIAR partnership include:

* New Rices for Africa (NERICAs) developed by The Africa Rice Center. NERICAs combine the ruggedness of local African rice species (*Oryza glaberrima*) with the high productivity traits of Asian rice (*Oryza sativa*). Across Africa, NERICAs are planted on 100,000 hectares, including 60,000 hectares in Guinea and about 10,000 hectares in Uganda. NERICAs are helping poor countries in Sub-Saharan Africa cut their rice import bills while increasing incomes of poor farmers;
* Quality Protein Maize (QPM) developed by CIMMYT and partners containing twice the amount of lysine and tryptophan compared to normal maize, and currently being planted in 25 countries. QPM and other improved maize varieties alone contribute $1 billion annually to the economies of developing countries;
* Virus-free sweet potatoes developed by International Potato Center (CIP) and partners that have increased yields by 30 to 40 percent in China; resulting benefits at farm and village levels are estimated at $550 million per year;
* Improved aquaculture techniques developed by WorldFish Center, including new strains of tilapia fish that grow 60 percent faster and yield three harvests annually are boosting household incomes and nutrition in many countries, and
* New lentil varieties developed by International Center for Agricultural Research in the Dry Areas (ICARDA) have contributed additional production of 28,000 tons annually in Bangladesh, with estimated benefits of $12 million per year. Due to its high protein content, lentil is known as "poor man's meat."

These examples are a powerful but partial snapshot of the benefits generated by the Japan-CGIAR partnership. Building on these strengths, CGIAR is working closely with Japanese counterparts to strengthen the partnership through initiatives that foster knowledge-sharing and enhance development impacts. Examples include:

* Japan-CGIAR Fellowship Program, launched in 2004 with support from the Japanese Ministry of Agriculture, Forestry, and Fisheries and JIRCAS, is into its second year. The first batch of 11 Japanese Fellows are at various stages of completing their research assignments at CGIAR Centers, through practical experience in applying food and environmental science to problems of development and fostering knowledge sharing. In 2005, the program expects to award ten fellowships;

* JIRCAS has placed 11 senior researchers at various CGIAR Centers, an arrangement that is helping foster scientific cooperation between the Centers and JIRCAS;
* Japan Forum on International Agricultural Research for Sustainable Development (J-FARD) brings together leading Japanese scientists, agencies, universities, NGOs and civil society organizations. The J-FARD Secretariat is hosted by JIRCAS, and plans are underway to host a major seminar in July 14-15, 2005, and
* The Robert S. McNamara seminars of 2002 and 2003 were hugely popular. This occasional seminar series was hosted in partnership with Japanese Ministry of Foreign Affairs, Ministry of Agriculture, Forestry and Fisheries, JIRCAS, and others. The seminars attracted high-level participation from former Prime Minister Hashimoto, Mr. McNamara, and other dignitaries.

Japan's financial, technical, and intellectual support to the CGIAR is critical for the more than 8,500 CGIAR scientists and staff working in over 100 countries, addressing every component of the agricultural sector including agroforestry, biodiversity, food, forage and tree crops, pro-environment farming techniques, fisheries, forestry, livestock, food policies and agricultural research services.

Looking to the Future

It is clear that 2005 will be the Year for Development. The upcoming U.N. General Assembly in September 2005 will focus on the Millennium Development Goals, and call for more concerted actions to achieve them. This international focus on development offers an excellent opportunity to highlight the importance of agricultural research, strong national and international agricultural research systems, and need for efficient delivery mechanisms.

Japan has and continues to be a leader in supporting international development cooperation. Japan's scientific and technological prowess, along with its advocacy role, can help keep agricultural research at the front and center of the development agenda. CGIAR is gratified that recent G-8 Summit communiqués have recognized the strength and vitality of our partnerships. More recently, under the aegis of the U.N. Millennium Project, Professor Jeffrey Sachs' new report, "Investing in Development" asks the world community to increase support to agricultural research. With the deadline for achieving the MDGs less than a decade away, there is a pressing need for a more concerted, knowledge-based effort to reduce poverty. CGIAR looks forward to strengthening its cooperation with JIRCAS and other Japanese institutions to fulfil this important task.

For over 30 years, the Japan-CGIAR partnership has bridged the world of high science with the needs of poor farmers. Throughout history, science has made myriad contributions to human well-being. By acting together, Japan and the CGIAR can continue to bring the benefits of modern science to the world's poor farmers. In doing so, together we can make sustainable development a reality.

My Mission as a Liaison Officer in the CGIAR Secretariat

Since June, 2004, I have been stationed at the CGIAR Secretariat in Washington D.C., USA as a Liaison Officer, in which capacity my task is to further enhance the excellent partnership between CGIAR and Japan. Meanwhile, since the CGIAR Secretariat is also hosted by the World Bank, I have likewise benefited from my interaction with the Bank's staff.

One of the biggest events ,subsequent to my joining the Secretariat, was the Annual General Meeting (AGM 2004) held at Mexico City in October 2004, where over 1,000 international and Mexican policy makers, agricultural research experts, scientists, and development specialists attended (please see attached photo). Hosted by the Government of Mexico, the CIMMYT contributed huge efforts to its success, while the CGIAR Secretariat had an equally challenging task in preparing the agenda and documentation of the impressive meeting. Through this experience, I learned a lot about the ongoing reforms to improve world governance and evaluation systems as well as gained more knowledge on the global scope of CGIAR's Mission.

While financial grants from Japan are important for CGIAR, I perceived that the contribution of human resources is becoming more and more significant because Japanese world class agricultural techniques and researches are expected to contribute immensely towards advancing agricultural growth in developing countries. I furthermore discovered that there are quite a number of Japanese graduate students who are extremely interested in international

Opening Session of 2004 CGIAR Annual General Meeting of Stakeholders (Mexico City).

agriculture and further improving agricultural techniques in these developing regions. However, most of them lack awareness about how to build their careers, and they don't have enough information on the various programs available in the international agricultural arena. Hence, I firmly believe that JIRCAS as well as CGIAR can gain enormously by providing information and opportunities in international agriculture for these young scientists. Science progresses through cooperation and I am delighted to have this opportunity to strengthen the Japan-CGIAR alliance to mutual advantage.

Masayoshi Saito
Research Planning and Coordination Division, JIRCAS

ICARDA

Evaluation and Enhancement of Drought Tolerance in Wheat of West Asia

Agricultural production in the dry regions of West Asia, which is mostly under rainfed conditions (approximate annual precipitation, 200 - 400 mm), is vulnerable to drought and far from sufficient to meet the food demand of the rapidly growing population. The level of sustainable agriculture thus remains low due to unfavorable environmental conditions. Urgent rehabilitation of productive agriculture is likewise demanded in the regions where existing agricultural systems have been destroyed during the recent conflicts.

In the cultivation of wheat, one of the main crops in these regions, chief constraints which cause low productivity are scarce water resource and low soil fertility, as well as biotic and abiotic stresses from diseases, pests, etc. The yield of wheat production accordingly remains low at less than 2 ton/ha. Nevertheless, technical advances for overcoming these constraints are being achieved in water-harvesting management and breeding methodologies.

On the other hand, West Asia is extremely rich in terms of genetic diversity of wheat germplasm. To meet the strong demand for increased and more stable wheat production in these regions, the research efforts on wheat should therefore focus on more extensive utilization of genetic resources indigenous to these regions, and the development of crop management practices under adverse conditions of both limited water supply and low soil fertility. Take note that recent wheat production in Syria, under irrigated conditions with improved management, shows higher yields double to those cultivated only under rainfed conditions.

The research partnership established between ICARDA and JIRCAS aims at the evaluation/monitoring and enhancement of wheat germplasm tolerant to environmental stresses. Within the framework of the collaborative project, a study on wheat entitled "Evaluation of Genetic Resources and Biotechnological Approaches for the Improvement of Wheat Germplasm Tolerant to Environmental Stresses" has been implemented since November 2003, with the deployment of a JIRCAS scientist with long-term assignment in the research site.

Fields of wheat, lentil, barley and olive in the dry regions of West Asia, near Aleppo City, Syria (with annual average precipitation of 300 mm) taken in May 2004.

In addition, a JIRCAS strategic study project on sustainable production in dryland agriculture in West Asia has been recently funded by the Ministry of Agriculture, Forestry and Fisheries, Japan, in collaboration with ICARDA and the University of Hokkaido where a JIRCAS Post-doctoral fellow was dispatched to reinforce research activities.

Masanori Inagaki
Biological Resources Division, JIRCAS

WARDA

Collaborative Research between WARDA and JIRCAS on Drought-Tolerant Rice

Rice in Africa is largely produced under a rainfed ecosystem and is hampered by a number of constraints. Hence, JIRCAS initiated a collaborative research project targeted at improving rice productivity in Africa with the Africa Rice Center (WARDA). Previously, WARDA has developed some NERICA (New Rice for Africa) varieties which showed potential adaptability to the rainfed ecosystem, especially for upland conditions. However, drought still remains one of the major constraints and it is deemed necessary to develop rice varieties adaptable to drought condition.

Drought stress-tolerance is known as a complicated phenotypic characteristic. To set a clear strategy for improving this trait, we have selected drought-tolerant varieties in the vegetative growth stage at WARDA. From the characterization of the selected accessions, they have deeper roots compared to the drought-sensitive ones, thus we established that the deep root system is the key characteristic related to the tolerance in the region. The deeper rooting capacity enables plants to access water in deeper parts of the arid soil.

After screening diverse genetic resources for this trait, we observed extensive variation of it. By furthermore elucidating the genes related to the deep root system, we aim to contribute to the breeding program for drought-tolerant rice by introducing these identified genes into elite varieties.

Testing for deep root system in the field.

Hiroshi Tsunematsu
Biological Resources Division, JIRCAS

ICRISAT

Research from the Forefront of the Global Food Crisis: Versatile Cowpea in the Sahel

I was very excited when I first stood on the soils of our project site in the Sahel in Africa. Obviously, the sandy soils are very poor but still providing the people with staple foods. Since I was truly standing in the frontline of the food crisis in the world, it is not difficult for me to understand that "Feeding Soils" is the most important issue for the people to survive in this harsh environment. ICRISAT-Niamey is a Sahelian institution which is located in the most marginal farmlands in the world and the scientists are facing real difficulty in dealing with the farmers and tackling the problems of Sahelian agriculture. Therefore, I am very proud of being a team scientist of the ICRISAT-JIRCAS collaboration project in the Sahel.

Cowpea, which originated in East Africa and was domesticated in Central Africa around 5,000 to 6,000 years ago, is closely linked to the domestic cultivation of pearl millet in the region. As a matter of fact, the people have been historically raising cowpea with pearl millet for a long time in the Sahel, mainly because cowpea is one of the few crops which can produce protein-rich food in the infertile and dry soils, although the grain yield (e.g. 171 kg/ha in Niger) is far below its potential. The low grain yield of cowpea in the farmers' fields however does not reduce its importance because of its multiple contributions to household food production, income generation as a cash crop (grain and fodder), and soil fertility improvement.

Cowpea is a relatively low (potassium) P-tolerant crop and is able to utilize symbiotically fixed air N_2 as a nitrogen source. Part of fixed nitrogen remains in the soil with the root residues which improves soil fertility and gives benefit to the subsequent crops. Therefore, it is highly feasible that cowpea germplasm accessions with higher abilities to fix air N_2,

Cowpea intercropped with pearl millet.

acquire fixed P, and produce high biomass could be identified from widely diverse genetic resources in West Africa, and their utilization will contribute not only to achieving sustainable productivity but also to the maintenance of soil fertility within the traditional cropping system.

The objective of my research is to select cowpea germplasm for enhanced adaptability to low soil fertility conditions, then contribute to the improvement of soil fertility management as well as to the stable production of crops in the regional cropping system. I am indeed delighted that JIRCAS is jointly implementing this ICRISAT-JIRCAS collaborative project in the Sahel, which is giving me the opportunity to work for cowpea improvement at the very threshold of the ongoing food crisis struggle in the world.

Ryoichi Matsunaga
Biological Resources Division, JIRCAS

ICRISAT

Working for Soil Fertility Improvement in the Sahel of West Africa

As part of my work as member of the JIRCAS international project since June 2003, I have been dispatched to the ICRISAT Sahelian Center (ISC) to carry out research activities on improving the fertility of sandy soils in the semi-arid zone of West Africa through organic management. Incidentally, I have initially worked for one year in ISC with a grant from Japan's Ministry of Foreign Affairs prior to joining this project, thus this is my 4th year in Niger as well as in the ISC.

Located in Niamey, Niger, West Africa, ISC is the focal center of ICRISAT's African research & development activities and is therefore functioning as the hub for all stations distributed in different areas of the African region. Working in a kind of international environment with a Burkina Faso scientist as Regional Director and with other experts of different disciplines from Canada, Chad, Cameroon, Ivory, Nigeria, and Belgium, the Japanese scientists represent a majority in the group due to the dispatch of 3 JIRCAS researchers, including myself.

The two sub-themes that I am currently working on are: characterization of the study area and evaluation of the dynamics of organic materials in the poor sandy soils. Characterization will be done through the evaluation of indigenous knowledge in agro-pastoral zones in order to identify better approaches for local agricultural problems. Likewise, organic materials play a key role for sustainable

Fertilizing Sahelian field with cattle manure during dry season.

agriculture in this region due to the increase in usage of chemical fertilizers for millet production, thus research will be done with special focus on organic form nitrogen, especially the PEON (phosphate-buffer-extractable organic nitrogen) for more effective and sustainable nutrient management. My total commitment for this project is 5 years and I will certainly strive to accomplish the necessary tasks under the target objective.

Keiichi Hayashi
Crop Production and Environment Division, JIRCAS

IFPRI

Vertical Coordination of Firm-Farm Linkaging in Asia

Many Asian developing countries have achieved higher food self-sufficiency rates and better economic performances. But rural poverty is still a serious issue, because of the cheap prices of staple foods such as rice and wheat, as well as insufficient labor absorption by manufacturing industries.

There are three proposed measures to improve rural income; agricultural diversification that promotes high price-per unit products, value-addition to food products through postharvest processing and more efficient food distribution system, and thirdly, encouraging food processing industries to rural areas aimed at expanding food markets, as well as providing local employment opportunities.

Since upland crops and livestock products are usually processed prior to consumption, the relationship between enterprises and farmers is becoming a key issue in this study field. The farming practice, generally called "vertical coordination," which allows contract negotiation on the quality and prices of goods prior to actual farm production is becoming popular, especially due to the recent focus on food safety standards.

Processing factory of cucumber pickles in India.

The International Food Policy Research Institute (IFPRI) is tackling this issue as a "High Value Agriculture" project targeted for Asia and Africa, and I am in charge of Asian countries. Based on preliminary study in Asia, even small farmers tend to gain stable prices, better incomes and obtain technical assistance through contract farming because enterprises can not procure enough materials for processing without their participation. This is very different from South America and Africa. Contract farmings are often organized by foreign enterprises, and supermarkets are also emerging due to the expansion of the rich and middle income classes in urban areas.

This project, targeting six Asian countries, intends to analyze the relative advantage of contract farming over non-contract farming, based on classifications of enterprises into foreign and domestic capital holdings, and export or domestic market-oriented ones. Depending on the results, we hope to get policy implications on whether attracting foreign capital is appropriate for agricultural development and which types of industries are appropriate.

However, data availability is the most serious obstacle toward advancing this project since surveys among private enterprises are often initially refused. The second best method is to draw inferences on the behaviors of enterprises through farm income surveys. Also, since most farmers in developing countries are at subsistence level only and doing intercropping, there is the uncertainty of being unable to get enough accurate farm observations. To cope with such irreversible error in farm surveys, we are building collaborative partnerships with research institutes in each country for more comprehensive and in-depth analyses.

Minoru Tada
Development Research Division, JIRCAS

ILRI

Elucidation of Trypanosome-Resistant Genes in Cattle: An ILRI -JIRCAS Project

The International Livestock Research Institute (ILRI) is located in the western part of Nairobi, 15 km away from its centre. Although Nairobi is close to the equator with an altitude of 1,600 m, its year round climate is rather similar to that of summers in Karuizawa, Japan.

ILRI's stated mandate is to eradicate poverty by enabling small-scale livestock farmers to earn more income from their livestock, in order to make sustainable development possible. For this purpose, many researchers from all over the world are working on themes and topics related to sustainable livestock management, such as how to control infectious diseases and how to develop market systems in which the small-scale farms could participate.

My own research subject at ILRI is a protozoan parasite called trypanosome, which infects ruminants. Trypanosome can escape the resident antibodies by frequently changing the antigen of its body surface within its host. No effective vaccines for trypanosome have therefore yet been developed.

On the other hand, we have found the existence of a variety of cattle in Africa which shows resistance to trypanosome. We are currently trying to search and identify the genes which determine the resistance to trypanosome, by comparing the gene expression of this particular resistant breed of cattle with the gene expressions of other cattle susceptible to trypanosome. We expect that the acquired genetic information will serve as a marker to improve and engineer a hybrid species of cattle with resistance to trypanosome as well as with higher economic productivity.

The photograph shown above was taken on campus when the party from the Japanese Embassy visited us at ILRI. In the picture with me (back, left) are Mr. Miyamura, the Japanese Ambassador to Kenya (back, right), Dr. Honda, a researcher at ILRI (back, centre), Mr. Masuyama, the Second Secretary for the Embassy (front, right) and Dr. Yamage, a researcher at ILRI (front, left).

Kazuhiro Yoshihara
Animal Production and Grassland Division, JIRCAS

IRRI

Towards Water-Efficient Rice Cultivation System with High Yield and Low Environmental Impacts

I have been working in the International Rice Research Institute (IRRI) in the Philippines since October 2004, as the person responsible for the development of soil and crop management techniques under the Japanese Government-funded research project entitled "Development of Integrated Rice Cultivation System under Water-saving Conditions." In January 2005, Dr. Nobuya Kobayashi, a senior JIRCAS researcher, who takes charge of the breeding component of the project, likewise arrived at IRRI to join the team. Currently, our daily task is involved with brainstorming for the master plan of the project and the preliminary project evaluation meetings.

Prior to this research, we already had a series of four projects funded by the Japanese Government encompassing a total of 20-year collaborative history, hence a dual-laboratory system equipped with soil and breeding facilities and 14 full-time employees, has already been established. For the current project, I aim to propose a new system of rice cropping technology that delivers both high yield and water use efficiency, as well as mitigation of environmental loads, by effectively combining existing technologies and new materials.

The environs of IRRI, where rice scientists assemble together in one place to collaborate with other experts from different fields of specialty, is a very favorable environment for us to accomplish our objective. Meanwhile, for my project staff, therein lies a new challenge they have never yet experienced. Now they are assiduously studying the essential basic knowledge and practical techniques through preliminary experiments, along with expediting the procurement of necessary research equipments.

Project staff in front of IRRI's preliminary experimental field for alternate wet/dry irrigation management.

I cannot exactly say that I have no complaint since there are many incidental tasks, which are classified roughly into those requests by personnel from both institutes and their affiliates where I belong, as well as from other organizations. Actually, for as long as I work as a staff of both institutes, this is expected. However, since IRRI frequently receives many Japanese visitors and requests for information, I have been meeting numerous contacts almost every day. Arguably, I should be pleased but it is really quite a huge number. Hence, I realized that dividing my time wisely will also be an important challenge in carrying out this project to completion.

Yasukazu Hosen
Crop Production and Environment Division, JIRCAS

CIAT-ASIA

Slash-and-Burn Agriculture in Northern Laos — A Study by CIAT in Asia

Centro Internacional de Agricultura Tropical in Asia (CIAT in Asia) is located in Vientiane, Laos where 6 international staffs are benched. Though it is an outpost of CGIAR, we don't have laboratory and experimental fields because most of the projects are implemented by site-specific participatory and practical researches in Laos and neighboring countries. I brought computer and satellite data here to study the variation of water resource and land use in Northern Laos through spatial analysis.

In Northern Laos, slash-and-burn agriculture for upland rice has been conventionally practiced in steep mountainous areas. When the population was small and fields can be fallowed for a long time to regenerate vegetation and soil capacity, slash-and-burn agriculture was considered a sustainable system that met environmental restrictions. However, it is recently prohibited due to forest conservation policy and transition to short-term rotation farming. With the physical conditions and economical constraints still severe as ever, it nevertheless means the conversion into upland farming by short-term fallow. When fallow length is shortened, regeneration of fertility and effects of weed suppression decline and consequently, productivity is decreased. To compensate and improve the land productivity and farmers' income, CIAT in Asia has experimented on some projects such as animal feeding stabilization, small scale agro-enterprise, etc.

How does the cycle of farming and fallow rotate? How does it affect vegetative regeneration and crop production? To answer these questions, chronological analysis using satellite imagery is very useful and effective. The results obtained by the analysis show that it requires 11 years for a fallow to regenerate similar biomass to that of a forest. However, the regeneration of vegetation in the early stages of fallow is slower in the intensively used lands, and soil capacity for plant production has deteriorated in the areas near Mekong River and its tributary.

Landscape showing slash-and-burn agriculture in Laos.

Field survey on land use and soil properties has been implemented last year in the same site of the Animal Feeding Project of CIAT. The village is situated 20 km southeast of Luang Prabang, but it is isolated by the Khan River, which requires a small boat to traverse it.

Last September, we also had an opportunity to investigate upland harvesting. On the over 30 degrees steep slopes, where even grazing is difficult in Japan, nearly ten people including women and old persons harvested rice ears by sickle. The harvested rice were gathered in the small hut on the hillside and stuffed into bags. I tried to lift one bag but

could not because it must have weighed between 30-40 kg each. The farmers humped each to the village by walking in steep slopes and trail for over 30 minutes.

The countermeasures to slash-and-burn agriculture are closely associated with poverty problems in Laos. Although irrigation has been developing and domestic self-sufficiency of rice has been statistically achieved in 2000, there is a huge regional gap and the marketing network remains insufficient, thus upland rice cultivation in northern mountainous region has continued in such adverse conditions. In the village, with not a single vehicle in sight, it is inconceivable that roads and irrigation canals will soon be constructed and vast and profitable lowland paddies and gardens will appear. That is why even though it is laborious, local farmers have to continue cultivating their lands in the same manner. If fallow control is the only practical management tool to support them, comprehensive information on their land resources should be provided through spatial analysis, so that they can determine the most effective crop-fallow rotation systems on their own.

Yukiyo Yamamoto
Development Research Division, JIRCAS

Fellows under the Japan-CGIAR Fellowship Program FY 2004 Coordinated by JIRCAS

Name	Theme	Center	University or Affiliate Institute
Shinji Mizuno	Experiments on Physiology of Anaerobic Germination	IRRI	Chiba Univ.
Noriko Furuya	Biosafety Regulations and Community Awareness Surrounding the Introduction of Transgenic Crops - An Example from Transgenic Papaya	CIMMYT	Tokyo Univ. of Agriculture
Miyuki Iiyama	Sustaining Land and Livelihoods	ILRI	Univ. of Tokyo
Maiko Harada	Cereals and Legumes Improvement Using Conventional and Modern Tools for Sustainable Production in the SAT	ICRISAT	Univ. of Tsukuba (Japan Marine and Sci. Tech. Center)
YoshihikoTokuji	Breeding Cereals for Stress Tolerance	ICARDA	Obihiro Univ. Agric. Vet. Med.
Yoshiharu Kozai	Sustainable Development in Disadvantaged Lands	IFPRI	Univ. of Tsukuba
Naoko Kozai	Development and Marketing of Tropical Fruits and Underutilized Crops for Improved Nutrition and Incomes	IPGRI	United Graduate School of Agric. Sci., Ehime Univ.
Tomoe Inoue	Breeding Cereals for Stress Tolerance	ICARDA	Tottori Univ.
Kumiko Tsujimoto	Water Resource Allocation: Productivity and Environmental Impacts	IFPRI	Kyoto Univ.
Kaori Sonobe	Breeding Cereals for Stress Tolerance	ICARDA	Tottori Univ.
Yuko Ogo	Identification of Genetic Components in Crops Towards Abiotic Stress Tolerance for Sustainable Crop Production	CIAT	Univ. of Tokyo

New Memorandum of Agreement (MOU) with CIRAD

On the 17th of December, 2004, JIRCAS tied a comprehensive MOU with CIRAD (Centre de Coopération Internationale en Recherché Agronomique pour le Développement) to strengthen future cooperation. The signing ceremony held at the French Embassy in Tokyo was attended by signatories Dr. Debre, President of CIRAD and Dr. Iwamoto, President of JIRCAS. Dr. Noguchi, JIRCAS Vice-President, and French Attaché for Science and Technology, Dr. Roy, witnessed the event in the presence of French Ambassador Montferrand, CIRAD Coordinator Dr. Durand as well as representatives from Japan's Ministry of Foreign Affairs, JICA and other dignitaries.

CIRAD was set up as a French research center after World War I to solve issues related to agriculture, forestry and fisheries in developing countries. Currently, it has approximately 1,800 scientists, out of which about 650 researchers are working abroad. In the past, the main research fields were in Indochina and Africa, especially Côte d' Ivoire. But currently, Brazil and Vietnam are now the biggest recipient countries for their research activities. Retrospectively, TARC, the predecessor of JIRCAS, was established in 1970 based on CIRAD as its model.

JIRCAS launched a new project in Fiscal Year 2004

Signing of the MOU at the French Embassy in Tokyo (December 17, 2004)

to control Citrus Huanglongbing (HLB) disease in Vietnam, in collaboration with SOFRI (Southern Fruit Research Institute). To implement this project effectively, partnership with CIRAD is very important. Likewise, with regards to our research in Africa, cooperation with CIRAD, with its accumulated substantial research results in that area, will be an added boost. To contribute to the common goal to alleviate starvation and poverty in the world, JIRCAS is planning to further collaboration with CIRAD.

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