



JAPAN AND THE CGIAR

STRENGTHENING THE PARTNERSHIP



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2004 - 2006

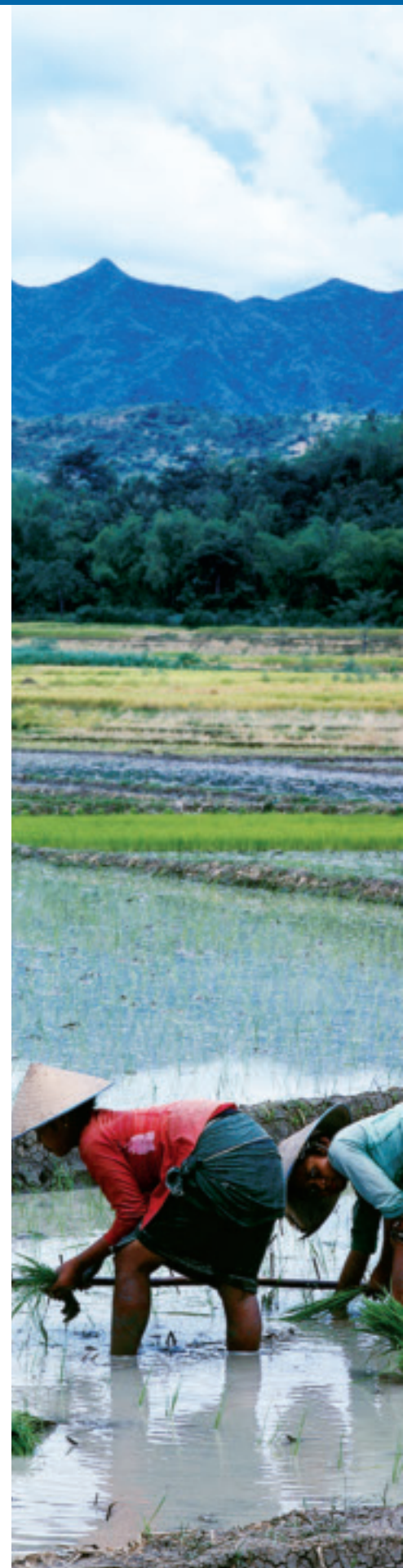


The text for this publication was prepared by Dr. Masayoshi Saito, a Research Coordinator in the Research Planning and Coordination Division of the Japan International Research Center for Agricultural Science (JIRCAS), while he was on special assignment as a Liaison Officer at the CGIAR Secretariat. In preparing the document, he drew on valuable contributions from many colleagues across the CGIAR and in various Japanese organizations, including JIRCAS, the Japan International Cooperation Agency (JICA), the Ministry of Foreign Affairs and the Ministry of Agriculture, Forestry and Fisheries. In addition, Dr. Saito received helpful detailed comments from Prof. Kazuo Watanabe of the Gene Research Center at the University of Tsukuba. We are very grateful for all of the input and suggestions that were generously provided.



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I. Introduction

Japan has enjoyed a long history of fruitful cooperation with the Consultative Group on International Agricultural Research (CGIAR) since becoming its 22nd Member in 1972, the year after its founding. Today, Japan's contribution to the CGIAR is shifting, and the partnership between Japan and the CGIAR now needs to be revised to reflect the present state of international agricultural research and Japan's changing role. As Japanese overseas development assistance (ODA) declines, the country now provides less financing but more human resources to the CGIAR than it has in the past; and it focuses on promoting world-class research and technological innovation.

In this changing environment, effective Japanese-CGIAR collaboration is more important than ever. Continuing this important partnership, and working to strengthen it, will help improve worldwide food production in a sustainable manner and stabilize the economies and societies of developing countries.

As with energy, Japan has little prospect of producing enough food to meet its requirements. As the country depends heavily on imported food — it has been the world's largest net importer of agricultural products since 1984 — the security of the world's food supply directly affects the Japanese economy and way of life.

But equal to Japan's dependence on overseas sources of imported food is its ability to help ensure their reliability. Japan's advanced agricultural science and technology capabilities should be fully engaged to address the world's food and environmental issues. Addressing the environmental issues that affect worldwide food production will, in turn, improve Japan's security and contribute to its continuing prosperity.¹

Undertaking collaborative research with developing countries is critical to this effort, but the effectiveness of bilateral cooperation is often limited by scant resources to fund research. This makes collaborating with the CGIAR an efficient way to increase the value of Japan's research investments. By sharing Japan's knowledge of agricultural technologies with developing countries, and by promoting research and development, Japan can help find solutions to food and environment problems of importance to Japan and the rest of world.

Strengthening the partnership between Japan and the CGIAR requires a clear cooperative strategy. Japanese institutions are actively defining high-priority research fields and sites and finding ways to cooperate with CGIAR Centers. The strategy for strengthening the partnership must be aligned with Japan's ODA policy, and every effort must be made to increase Japanese citizens' awareness of CGIAR activities.

The main objectives of this report are to review the historical and present relationship between Japan and the CGIAR and set forth the key issues concerning the future partnership.



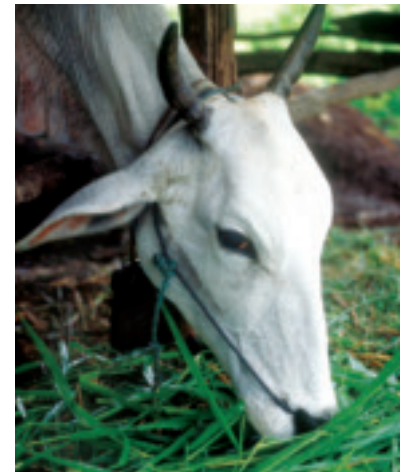
2. Why does Japan cooperate with the CGIAR?

Cooperation with the CGIAR benefits Japan directly by improving the country's ability to help Africa and its access worldwide to crop genetic resources and cutting-edge research.

Japan has hosted the Tokyo International Conference on African Development three times, in 1993, 1998 and 2003. At the most recent conference, Prime Minister Junichiro Koizumi announced Japan's basic policy for assistance to Africa.² Contributing to agricultural development in Africa is essential if Japan is to fulfill its international responsibilities. Furthermore, halving poverty by 2015, one of the Millennium Development Goals (MDGs) adopted by the United Nations Development Summit in 2000, depends on enhancing African agricultural production.

However, Japan does not have a strong agricultural research base in Africa. Cooperating on African agriculture with CGIAR Centers is an efficient way for Japan to contribute in this field. Improving African agricultural productivity will stabilize global food supplies and contribute to the worldwide food security, thereby enhancing Japan's own food security.

Genetic resources are essential for improving agricultural productivity in both developing and developed countries. Japan is home to several gene banks; but collecting genetic resources from around the world is difficult, and the international transfer of genetic resources is strictly regulated. Japanese agricultural research institutions can benefit tremendously by collaborating with CGIAR Centers, which have large collections of genetic resources.





Cutting-edge research takes place at CGIAR Centers as well as at Japanese agricultural research institutions. Cooperation between these groups will enhance research productivity on both sides. This cutting-edge research provides basic knowledge on improving agricultural technology. In fact, researchers from the Japan International Research Center for Agricultural Sciences (JIRCAS, the successor organization of the Tropical Agricultural Research Center following reorganization in 1993) are working with CGIAR Centers on the gene constructs carrying the drought responsive element DREB (dehydration responsive element binding protein of *Arabidopsis*) for developing transgenic plants that tolerate drought and other abiotic stresses. Cooperation in research areas such as biosafety assessments is particularly beneficial for Japanese researchers. Some CGIAR Centers have achieved satisfactory results with genetically modified crop species, and evaluations are well managed by Center biosafety committees.

In addition to those direct benefits, the synergistic advantages for Japanese institutions and CGIAR Centers alike should be emphasized when explaining the partnership to Japanese stakeholders.

3. Japanese contributions to the CGIAR

Japan's main point of contact with the CGIAR is its Ministry of Foreign Affairs (MOFA).³ Other partners are the Ministry of Agriculture, Forestry and Fisheries (MAFF),⁴ JIRCAS⁵ and the Japan International Cooperation Agency (JICA).⁶ While total Japanese funding to the CGIAR is decreasing, budgets for individual research projects are increasing, as is the number of Japanese researchers working at the Centers. In addition, a new fellowship program for young scientists was launched in 2004.

3.1 Funding

Japan has historically been one of the CGIAR's largest donors, contributing \$423.1 million between 1972 and 1998. This contribution represents the CGIAR's third largest donation, behind those of the World Bank and the United States. In 1995, Japan was the CGIAR's second-largest donor, as the Japanese government provided \$33.9 million, or 12.6 percent, of the CGIAR's total funding. However, as total Japanese ODA has decreased since 2000, so has Japanese funding to the CGIAR. In 2002, Japan was the CGIAR's fifth-largest donor, contributing \$17.1 million, or 4.8 percent, of the CGIAR's funding. In 2004, Japan's investment dropped further to \$14.4 million, which was only 3.3 percent of the CGIAR's funding (see Table 1).



Table 1: CGIAR funding to the research agenda by member group (million US\$)

Members	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
World Bank	50.0	44.9	45.0	45.0	45.0	45.0	45.0	50.0	50.0	50.0
United States	32.1	30.5	37.8	40.5	39.4	42.1	45.4	54.9	55.5	54.2
United Kingdom	9.9	10.7	10.0	11.5	13.9	14.9	19.2	24.8	26.4	35.3
European Comm.	16.7	19.7	23.1	24.9	6.0	22.3	21.7	24.5	27.2	26.3
Japan	33.9	36.4	33.6	35.3	39.9	34.6	29.2	17.1	15.0	14.4
Netherlands	12.8	15.9	14.5	14.7	11.6	13.7	12.2	17.0	19.2	20.9
Switzerland	11.9	19.0	20.8	22.7	22.8	18.3	15.7	16.0	15.6	18.1
Germany	15.8	16.8	16.9	16.3	15.5	10.2	12.3	10.5	11.6	15.3
Canada	12.7	13.9	12.9	12.3	12.3	11.4	11.6	10.7	20.9	32.5
Denmark	10.0	18.0	19.1	17.7	14.0	11.0	10.6	10.2	9.1	8.2
Others	63.8	78.3	85.9	98.9	109.1	107.7	114.4	121.6	130.3	161.4
Total	269.6	304.1	319.6	339.8	329.5	331.2	337.3	357.3	380.8	436.6

Source: CGIAR Annual Report.

Japan has contributed financially to all CGIAR Centers. Since 2003, however, it has prioritized the International Rice Research Institute (IRRI), International Maize and Wheat Improvement Center (CIMMYT, by its Spanish acronym), and Africa Rice Center (WARDA, formerly West Africa Rice Development Association). At the same time, Japan has dramatically decreased funding to the International Institute of Tropical Agriculture (IITA), International Center for Tropical Agriculture (CIAT, by its Spanish acronym), International Potato Center (CIP, by its Spanish acronym), International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), International Livestock Research Institute (ILRI) and Worldfish Center (see Table 2).





Table 2: Center shares of Japanese funding to the CGIAR (%)

Center	1985	1990	1995	2000	2001	2002	2003	2004
Africa Rice	4.8	5.9	5.2	5.8	6.3	9.1	12.8	14.2
CIAT	12.3	11.8	9.6	10.2	11.4	10.3	5.4	5.0
CIFOR	–	–	5.0	4.8	4.7	4.3	4.9	4.5
CIMMYT	11.1	8.7	7.6	6.7	6.4	9.3	14.2	15.8
CIP	5.2	4.1	3.6	4.4	5.2	4.7	2.4	2.2
ICARDA	0.0	0.0	1.4	2.3	2.9	2.7	3.9	3.6
ICRISAT	14.0	12.5	9.5	8.4	8.1	7.4	4.3	4.1
IFPRI	1.9	3.3	4.1	3.7	3.6	3.3	4.6	4.2
IITA	12.9	11.7	9.3	11.4	11.1	10.1	2.9	2.7
ILRI	1.8	4.4	3.3	4.0	4.2	3.8	2.2	2.2
IPGRI	5.9	5.4	5.0	5.6	5.4	4.9	5.6	5.0
IRRI	29.9	28.0	21.1	21.8	21.2	20.8	26.7	29.6
ISNAR	0.0	1.7	1.4	1.9	1.7	1.6	0.1	–
IWMI	0.3	0.9	1.9	2.6	2.3	2.1	3.2	3.1
World Agroforestry	0.0	1.7	4.1	2.4	2.4	2.1	2.1	2.1
WorldFish	0.0	0.0	8.0	2.6	1.8	1.6	1.6	1.5

Note: CIFOR was founded in 1993; ISNAR closed in 2003.

CIAT = International Center for Tropical Agriculture, CIFOR = Center for International Forestry Research, CIMMYT = International Maize and Wheat Improvement Center, CIP = International Potato Center, ICARDA = International Center for Agricultural Research in the Dry Areas, ICRISAT = International Crops Research Institute for the Semi-Arid Tropics, IFPRI = International Food Policy Research Institute, IITA = International Institute of Tropical Agriculture, ILRI = International Livestock Research Institute, IPGRI = International Plant Genetic Resources Institute, IRRI = International Rice Research Institute, ISNAR = International Service for National Agricultural Research, IWMI = International Water Management Institute.

Source: Japan Ministry of Agriculture, Forestry and Fisheries, International Research Division.

Because most of Japan's funds for the CGIAR come from its ODA budget, the Japan-CGIAR partnership must align with Japan's ODA policy. Japan's Official Development Assistance Charter, reported by the government in August 2003, spells out its basic policies on partnership and collaboration with the international community (see Partnership and collaboration with the international community below).

Partnership and collaboration with the international community

Excerpt from Japan's Official Development Assistance Charter. ⁷

Mainly with the initiative of international organizations, the international community is sharing more common development goals and strategies, and various stakeholders are increasingly coordinating their aid activities. Japan will participate in this process and endeavor to play a leading role. In parallel with such

efforts, Japan will pursue collaboration with United Nations organizations, international financial institutions, other donor countries, NGOs, private companies and other entities. In particular, Japan will enhance collaboration with international organizations that possess expertise and political neutrality, and will endeavor to ensure that Japan's policies are reflected appropriately in the management of those organizations.

In addition, Japan will actively promote South-South cooperation in partnership with more advanced developing countries in Asia and other regions. Japan will also strengthen collaboration with regional cooperation frameworks, and will support region-wide cooperation that encompasses several countries.

The government released in February 2005 Japan's Medium-Term Policy on Development Assistance, which listed poverty reduction, sustainable growth, addressing global issues and peace building as priority issues for Japan's ODA. Under poverty reduction, the document cited balanced development as a consideration in offering assistance to reduce poverty through economic growth (see Toward balanced development below).

Toward balanced development

Excerpt from Japan's Medium-Term Policy on Official Development Assistance.⁸

Countries that are achieving economic growth also face the problem of regional disparities. These disparities occur in many cases between poor rural areas and comparatively affluent urban areas. For the development of rural areas, raising agricultural productivity is important. Japan will support the formulation of agriculture related policy, improvement of infrastructure such as irrigation and farm roads, dissemination and research/development of production technologies such as NERICA (New Rices for Africa), and strengthening of community organizations. Assistance will be provided to foster economic activities in rural areas, such as the processing of agricultural products, development of market distribution and sale of foodstuffs.

As the poor often depend directly on natural resources for their livelihoods and are therefore particularly vulnerable to the effects of environmental degradation, full attention will be paid to ensuring sustainable development in reducing poverty through economic growth.

Recent globalization trends have complicated global issues such as poverty alleviation, environmental conservation, and support for peace building; and the international community is addressing those issues in various ways. As exemplified by the MDGs, efforts to share development goals and collaborate to achieve these goals have been strengthened throughout the international community.





Within Japan, conditions surrounding ODA have become increasingly severe as a result of restrictions on government expenditures and administrative reform brought about by severe fiscal conditions. With the understanding and support of Japanese citizens, efforts toward ODA reform have been accelerated to ensure strategic values, flexibility, transparency, and efficiency in the implementation of Japan's ODA. With this in mind, CGIAR Centers should recognize the importance of coordinating their efforts with Japan's bilateral program, including JICA's technical cooperation projects.⁹

3.2 Governance and management

Japan's involvement in CGIAR governance and management has been significant. Keiji Kainuma has recently completed his term as a member of the Science Council, and Masa Iwanaga became Director General of CIMMYT in 2002 (see Genetically resourceful below). Since 1972, more than 70 Japanese scientists have served as members of CGIAR Center boards, covering all Centers. Currently, 15 board members are contributing to the governance of CGIAR Centers. Notably, two Japanese scientists have chaired the IRRI Board of Trustees. They are Kenzo Hemmi (1983-1988), after whom the Institute named a research building in 1992, and Keiji Otsuka (2004-present) (see Happy reunions below).

Genetically resourceful

When Masa Iwanaga became Director General of CIMMYT in 2002 — and the first citizen of an East Asian country to head a CGIAR Center — he had already managed genetic resources at CIP, CIAT and the International Plant Genetic Resources Institute (IPGRI), as well as served on the IITA Board of Trustees (2001-2002). For his many contributions to the CGIAR and international community, he was awarded the Japan Prize for Agricultural Sciences in 2006, having been chosen from a membership of 77,000 from the Association of Japanese Agricultural Scientific Societies.

Happy reunions

When Keiji Otsuka became the chair of the IRRI Board of Trustees, it was something of a homecoming. A respected agricultural economist, Dr. Otsuka had been a visiting scientist at IRRI from 1986 to 1989. He was also a visiting research fellow at the International Food Policy Research Institute (IFPRI) from 1993 to 1998.

Happy reunions are nothing new between Japan and IRRI. Japanese collaboration with IRRI goes back to the Institute's founding in the 1960s, before the CGIAR existed. IRRI developed in the mid-1960s the first modern breeding lines

for rice, producing new grain varieties whose high yields and rapid farmer adoption triggered the Green Revolution in Asia. Many Japanese researchers worked in cooperation with IRRI to intensify rice production. Around 1,000 modern varieties of rice — approximately half the number released in the 12 countries of South and Southeast Asia over the last 38 years — are linked to germplasm developed by IRRI and its partners, including Japan. The use of these modern varieties and the resultant increase in production have increased the availability of rice and helped to reduce rice prices globally.

The happy reunion of Osamu Ito, who was head of IRRI's Agronomy, Plant Physiology and Agroecology Division from 1996 to 1999, took place at ICRISAT, where the plant physiologist worked from 1989 to 1994 and currently serves on the Board of Trustees.

3.3 Researchers

Many Japanese researchers have been appointed or seconded to CGIAR Centers — 169 as of December 2004. Japanese researchers at CGIAR Centers can be divided into three categories: (i) scientists with a long-term appointment or secondment that created a strong connection with a Center (see Syrian about animal health below, Starch friends on page 10 and Rooted research on page 10), (ii) scientists whose medium-term stay at a Center resulted in a high-impact output contributing to agricultural development in the area (some of them contributing to governance and management of international research after returning to Japan), and (iii) young scientists who started their research careers at CGIAR Centers.

Syrian about animal health

Giro Orita was one of a team of veterinarians who arrived in Syria in October 1964 in response to a request to the Japanese government from the Syrian Ministry of Agriculture. When the Japanese team completed its mission in 1968, the Syrian government invited Dr. Orita to stay and continue his work, as well as foster collaboration in animal health research between Japan and Syria.

In 1983, when the Syria-based International Center for Agricultural Research in the Dry Areas (ICARDA) asked the Japanese government for help to develop small-ruminant pathology research, Dr. Orita was delegated by JICA to lead the institute's animal health research as a visiting veterinarian. In 1985, Dr. Orita received the Syrian Medal of Distinction (second rank) from the Minister of Culture. He left ICARDA in 1990 but continued to promote relationships between ICARDA and Japanese organizations. ICARDA later named a new animal health laboratory after him.



*Pictured above: Masa Iwanaga,
Director General of CIMMYT*

*Pictured below: Kejiro Otsuka,
Chair of the IRRI Board of Trustees*





Starch friends

Kazuo Kawano spent a quarter of a century, from 1973 to 1998, improving cassava at CIAT. Improved, high-starch varieties of cassava resulting from Dr. Kawano's research, which was supported by Japan, are planted on about 1.5 million hectares in Southeast Asia, or about 43 percent of the region's total cassava area.

Because the crop tolerates drought and problem soils, it is planted mostly on marginal uplands, above the more productive lowlands occupied by rice paddies. The uplands of Southeast Asia are inhabited mainly by the region's poorest farmers. In Thailand, improved cassava — 52 percent of which originated at CIAT — has significantly increased cassava production, and the value of additional cassava production in the region up to 1998 was estimated to total \$390 million.

Dr. Kawano has been honored for his research contributions by the Japanese minister of foreign affairs and the king of Thailand.

Rooted research

Two notable Japanese scientists who have worked at CIP are Yoshihiro Eguchi and Kazuo Watanabe. Dr. Eguchi, who was seconded by JICA to work at CIP headquarters and at the CIP regional office in Indonesia, developed a new storage method for potato germplasm using the plant's seeds. Dr. Watanabe served at CIP as a core scientist from 1988 to 1996. Working since 1997 as an IPGRI honorary research fellow, he now provides strong support to CIP's development of drought-tolerant transgenic potato.

Since the 1970s, many Japanese researchers in national agricultural research institutions and universities have had medium-term secondments to CGIAR Centers. As of January 2006, 10 JIRCAS researchers were working at various Centers (and one additional Japanese staff member was working in the CGIAR Secretariat to enhance the partnership between Japan and the CGIAR). Research themes include the following:¹⁰

- sustainable production in dryland agriculture in West Asia (ICARDA),
- drought-tolerant rice (WARDA),
- selecting cowpea germplasm for enhanced adaptability to low soil-fertility conditions (ICRISAT),
- improving soil fertility in the Sahel of West Africa (ICRISAT),
- high-value agriculture for Asia and Africa (IFPRI),
- elucidation of trypanosome-resistance genes in cattle (ILRI),
- water-efficient rice cultivation with high yield and low environmental impacts (IRRI),



- study of the variation of water resource and land use in northern Laos (CIAT), and
- breeding and genetic studies on wheat development with *fusarium* head blight resistance (CIMMYT).

Several researchers have maintained strong connections with international agricultural research institutions after finishing their work at CGIAR Centers and returning to Japan. Nobuyoshi Maeno (CIAT, 1977-1981), Masayoshi Honma (IFPRI, 1989-1991) and Keiji Oga (IFPRI, 1990-1992), for example, not only continued their cooperation with the CGIAR after returning to Japan but are currently Center board members.

Several programs support young Japanese scientists who wish to work at CGIAR Centers. MOFA finances the Young Scientist Fellowship Program, which supports Japanese postdoctoral scientists' work at Centers by providing a special fund to the CGIAR. JICA supports the Japan Overseas Cooperation Volunteers program, which, on the basis of requests received from developing countries, assists young pre- and postdoctoral scientists who wish to participate in their economic and social development. Generally, volunteers spend 2 years participating in cooperative activities in developing countries, living and working with local people. The Japan Society for the Promotion of Science¹¹ awards fellowships to young Japanese postdoctoral researchers for conducting research at foreign universities or research institutions for a period of 2 years. The newest program is the Japan-CGIAR Fellowship Program supported by MAFF (see Japan's brightest young scientists on page 12).





Japan's brightest young scientists

The Japan-CGIAR Fellowship Program annually sends 10 graduate students to CGIAR Centers for about 2 months. MAFF launched the program in 2004 to enhance the professional development of some of Japan's best and brightest young scientists interested in CGIAR research, as well as to strengthen linkages between CGIAR Centers and Japanese agricultural research institutions. In July 2004, the selection committee, chaired by former CGIAR Science Council member Keiji Kainuma, selected the first 11 fellows and awarded each approximately \$15,000 for their research at CGIAR Centers.

The fellows have provided positive feedback about the program, particularly about the interesting research themes offered by the Centers and the care and cooperation they received from their hosts. Fellowships are open to Japanese nationals under the age of 35 who have a master's degree and an excellent academic record in agricultural development.

3.4 Highlights of collaborative research

The history of Japan-CGIAR collaboration is long and fruitful. Beyond the research cited above and in the sidebars, highlights included, in the 1980s, collaboration between ILRI and JIRCAS on the parasite that causes east coast fever in African livestock. The project investigated the mechanism of the disease and methods of diagnosis, resulting in an improved vaccine.

In the same decade, the Japanese government started funding a series of projects at ICRISAT that, in three phases (1984-1989, 1989-1994 and 1994-1999), engaged several JIRCAS scientists and postdocs in conducting extensive research on soil fertility in the semi-arid tropics. In the course of this project, Noriharu Ae and his colleagues discovered pigeonpea's unique phosphorus uptake mechanisms, a discovery that was published in the journal *Science*¹² and has had enormous impact on soil nutrient usage in the semi-arid tropics.

The mid-1980s brought the first efforts to breed the New Rices for Africa (NERICA) at WARDA, which has collaborated with Japanese institutions since its establishment in 1970. Many Japanese researchers contributed to breeding NERICA varieties adapted to the upland growing environments and low-input conditions broadly found in sub-Saharan Africa.

JIRCAS scientists were posted at ICARDA from 1989 to 1995 for a collaborative research program on developing sustainable rangeland management in West Asia and

North Africa. Activities included rangeland vegetation monitoring, natural resources mapping and conservation assisted by geographic information systems. Japanese researchers were also instrumental in establishing in the late 1980s ICARDA's biotechnology laboratory.

A successful collaboration begun in 1989 saw JICA and IITA improve tofu processing in Africa. The project improved on an expensive coagulated milk product in northern Nigeria called *wara*. Osamu Nakayama, a visiting researcher at IITA, developed an easy-to-produce, low-cost, high-nutrition tofu to substitute for the milk product, which local people readily accepted. Farmers began to produce the tofu and sell it in local markets, contributing to the local economy.

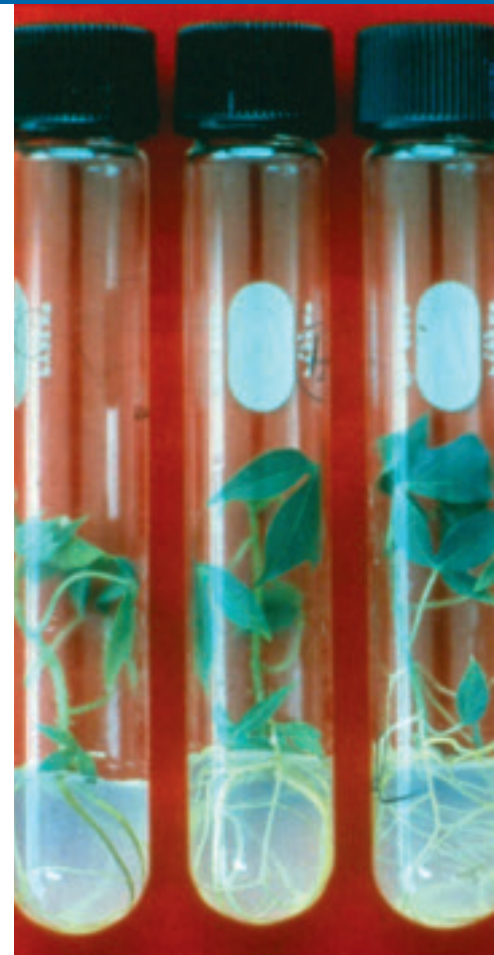
In 1991, CIP started cooperating with the National Agricultural Research Center for the Western Region (formerly the Shikoku Agricultural Research Center) of the National Agriculture and Bio-oriented Research Organization. The following year in Cuzco, Peru, this joint research group conducted research on the yacon, a root vegetable rich in oligosaccharide, a kind of sugar good for dieters and diabetics.

Japan has been working with the Center for International Forestry Research (CIFOR) since its establishment in 1993 to improve forest management in developing countries. Japan has a long history of forest management and provides this technology and knowledge to CIFOR, as well as financial support for three CIFOR projects studying sustainable forest management, how to revive damaged tropical forests, and forest fires.

Japan began contributing to the WorldFish Center in 1994 and has helped with the genetic improvement of fish resources. The following year, a Japanese donation to WorldFish went to renovating a research institute in Egypt that has become a base for the Center's research on fisheries in Africa and West Asia.

Japan funded the construction in Nairobi, from 1994 to 1996, of World Agroforestry's new research building and has contributed to research on restoring soil fertility in Africa with nitrogen-fixing legumes.

The 1990s saw a Japanese visiting fellow at the IFPRI undertake with other researchers a significant research program on land tenure and forest resource management. The study sought to determine the factors affecting the evolution of land tenure institutions and explore their effects on the efficiency of forest resource management and their consequences for small farmers. Several publications resulted from this research, including the books *Land and Schooling: Transferring Wealth Across Generations* (2004) and *Land Tenure and Natural Resource Management* (2001).





Since 1997, four Japanese researchers have had assignments at the International Water Management Institute (IWMI) to work on monitoring and modeling efficient water use. The new millennium has ushered in collaboration between Japanese institutions and IPGRI on germplasm collection and improvement, including a strong partnership between IPGRI and Japan's National Institute of Agrobiological Sciences focused on collecting *Japonica* rice varieties.

In collaboration with Japan's National Grasslands Research Institute, CIAT is researching the role of endophytes in tropical grasses. These are fungi that live in association with their hosts, often providing benefits, such as protection against pests. Well known in temperate grasses, endophytes have now been found in tropical grasses as well, where CIAT research has shown that they play a role in disease and insect resistance as well as drought tolerance.

Recent years have seen CGIAR expenditures increase in sub-Saharan Africa, where most Centers have activities. Two JIRCAS researchers currently work at the regional office of ICRISAT at Niamey, Niger, on soil fertility improvement and the versatile crop cowpea. This collaborative project in the Sahel of West Africa contributes to sustainable agriculture in the area.

MAFF, which has been providing funding to IRRI since 1984, is financing Phase 5 of the project, "Development of integrated rice cultivation system under water-saving conditions," which began in 2004 and will continue until 2009, with a budget of approximately \$300,000 per year.

A new CIMMYT 5-year research project supported by MAFF, "Breeding and genetic studies on wheat development with *fusarium* head blight resistance," started in 2004 with a budget of approximately \$600,000 per year.

4. Japan's framework for supporting the CGIAR

To successfully continue its collaborative work with the CGIAR, Japan must further strengthen this partnership while closely involving Japanese institutions. As the premier national institution in Japan focused on international agriculture, JIRCAS is a key contact for the CGIAR in the country. JIRCAS exchanges researchers with CGIAR Centers and serves as the secretariat for the Japan Forum on International Agricultural Research for Sustainable Development and the Japan-CGIAR Fellowship Program.

Many Japanese universities have international agricultural science divisions and promote education and cooperative research on international agriculture (see Major universities equipped with international agricultural facilities below). In the private sector, nongovernmental organizations and other groups — such as the Sasakawa Africa Association, the Asian Rural Institute, and the Organization for Industrial, Spiritual and Cultural Advancement (OISCA) International — have accumulated experience and knowledge related to international agriculture and can provide useful information to developing countries.

While Japanese funding to the CGIAR has declined in recent years, other forms of Japanese support have proliferated. In addition to committing additional human resources, as noted above, some new events regularly held in Japan help deliver the message of the CGIAR.

Major universities equipped with international agricultural facilities

- University of Tsukuba, Alliance of Research on North Africa
- University of Tokyo, Asian Natural Environmental Science Center
- Tokyo University of Agriculture and Technology, Department of International Environmental and Agricultural Science
- Tokyo University of Agriculture, Faculty of International Agriculture and Food Studies
- Nihon University, Regional Research Institute of Agricultural Production, College of Bioresource Sciences
- Nagoya University, International Cooperation Center for Agricultural Education
- Kyoto University, Center for South East Asia Studies
- Tottori University, Arid Land Research Center
- Kyushu University, Institute of Tropical Agriculture
- University of the Ryukyus, Tropical Biosphere Center

4.1 Japan Forum on International Agricultural Research

The Japan Forum on International Agricultural Research for Sustainable Development¹³ (J-FARD) was launched in July 2004. Led by CIMMYT board member Hisao Azuma, the forum promotes information-sharing among individuals and organizations involved in agricultural research through symposia, workshops and collaborative research opportunities. It brings together more than 20 leading Japanese universities





and centers of scientific excellence; private sector and multilateral institutions such as the Food and Agriculture Organization of the United Nations and the World Bank; and civil society organizations such as the Sasakawa Africa Association.

The aim of Japanese scientists and other stakeholders who participate in J-FARD is to intensify and strategize research activities in the fields of agriculture, forestry and fisheries. Taking into account environmental and socioeconomic considerations in the targeted developing countries, they work to achieve sustainable development while alleviating hunger and poverty and ameliorating environmental degradation. Participants agree that, as a member of the international community, Japan has a responsibility to make further contributions to improving stability and sustainability in developing countries. Recognition of the importance of such efforts is growing with the rapid globalization of the world economy, the intensification of human impacts on the environment, and the growing interdependency of the international community.

In addition to organizing international symposia in Japan, J-FARD can further enhance the Japan-CGIAR partnership by providing information about ongoing CGIAR programs to Japanese academic institutions and private sector organizations. It can also convey the views of these Japanese organizations back to the CGIAR.

4.2 Liaison Meeting of International Agricultural Research Institutions

The annual Liaison Meeting of International Agricultural Research Institutions, hosted by MAFF in Tokyo, presents an opportunity for all board members to communicate with one another face to face. The meeting aims to foster discussions on how to efficiently and effectively carry out cooperative international agricultural research between Japanese and international institutions.

The decline in Japanese funding for the CGIAR makes this a critical moment for the Japan-CGIAR partnership. This annual liaison meeting highlights the key role Japanese members of Center boards can play in fundraising. The meeting should also be recognized as an opportunity to strengthen the partnership by, for example, aligning the Japanese and CGIAR strategies for various regions, in particular regarding collaboration on African agricultural issues (see Japanese partnership strategy on page 17).

Participants include Japanese members of the CGIAR Science Council and Center boards; Japanese board members of the Asian Vegetable Research and Develop-

ment Center and the Food and Fertilizer Technology Center; the president of JIRCAS; representatives of MOFA and MAFF; and the World Bank Tokyo Office. Serving as the secretariat is the Division of International Research in MAFF's Agriculture, Forestry and Fisheries Research Council.

Discussions focus on how to further strengthen partnerships between Japan and international agricultural research institutions and also consider these institutions' proposals for agricultural research in Japan. Participants share information on trends in their institutes' research and governance and raise awareness in Japan of their research activities.

Japanese partnership strategy

*Excerpts from Promotional Policy for International Agricultural Research — Japan's Role in Solving Food and Environmental Issues*¹⁴

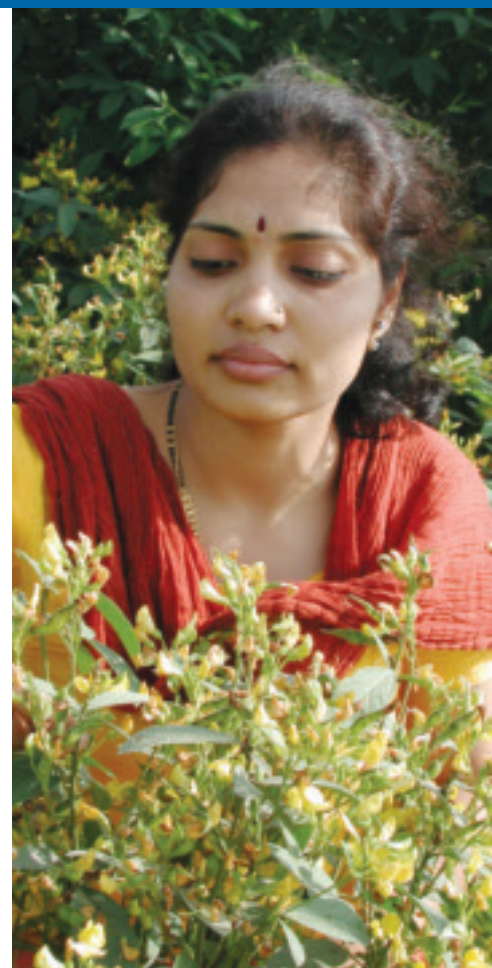
CONCEPTS FOR TARGET RESEARCH REGIONS

Densely populated East and Southeast Asia continue to be priority regions. Considering the significance of their environmental problems and regional disparities, effective research collaboration will be implemented in this region by facilitating dialogue with partner countries to determine priority areas and fields.

With respect to promoting agriculture in arid and semi-arid regions in West Asia, research collaboration with international research institutes will be implemented in light of the regions' improvements in fundamental infrastructure and social stability.

Although there has been little past collaboration in the field of agricultural research between Japan and South Asian countries, research collaboration in the region will be implemented through partnership with international research institutes and others.

Many of the least-developed countries are in Africa, the continent where agriculture is expected to play the most important and effective role in reducing hunger and poverty. Research collaboration in Africa will be implemented by promoting specific partnerships with international research institutes and with research institutions in industrialized countries that are well versed in African agriculture, as well as by using Japan's advanced technologies, research resources and experiences in Asia.





With respect to South America, research collaboration will be implemented for specific fields, such as environmental issues related to the conservation of tropical rainforests, that have global impact.

RESTRUCTURING PARTNERSHIPS AMONG RESEARCH-RELATED STAKEHOLDERS: INTERNATIONAL AGRICULTURAL RESEARCH INSTITUTES

The research and development (R&D) activities of the CGIAR research Centers focus on developing global public goods. Collaboration between Japan and the CGIAR toward achieving the MDGs, combining the knowledge and experiences of both sides, will effectively enhance the potential for resolving global issues and thus promote R&D.

In addition to providing R&D funding through Japanese ODA, partnerships and collaboration between Japan and the CGIAR will be strengthened by (i) increasing the number of researchers dispatched to CGIAR research Centers according to the strategies of Japan and the Centers; (ii) promoting research collaboration between the CGIAR research Centers and domestic stakeholders including line agencies, universities, etc.; and (iii) setting up a domestic support system for the CGIAR.

4.3 Taking up CGIAR challenges

The effective use of Japanese research resources calls for a strategy of more active contribution to the CGIAR Challenge Programs. A Challenge Program is a time-bound, independently governed program of high-impact research. It targets CGIAR goals in relation to complex issues of overwhelming global and/or regional significance and, to deliver its targets, requires partnership embracing a wide range of institutions.

At its 2001 Annual General Meeting, the CGIAR decided to accelerate, on a pilot, one-off basis, the preparation of up to three Challenge Programs so the System could explore ways of improving program design and implementation.

The Challenge Program for Water and Food creates research-based knowledge and methods for growing more food with less water and develops a transparent framework for setting targets and monitoring progress. The Generation Challenge Program uses advances in molecular biology and harnesses the rich global stocks of crop genetic resources to provide a new generation of plants that meet farmers' needs. HarvestPlus is an international, interdisciplinary research program that seeks to reduce micronutrient malnutrition by harnessing the powers of agriculture and nutrition research to breed

nutrient-rich staple foods. In 2002, the CGIAR decided to initiate the regular process for designing and developing Challenge Programs. At its 2004 Annual General Meeting, it approved in principle the Sub-Saharan Africa Challenge Program for a 5-year period.

4.4 Informing Japanese stakeholders

To raise awareness of the CGIAR and help Japanese citizens understand the importance of cooperating with the System, the benefits of cooperation must be clearly explained. The information should include the types of projects implemented and their outcomes, as well as the types of programs available for Japanese researchers and students. This information can be provided in various ways.

As JIRCAS collaborates on research with the Centers, its website can be used to present highlights of the Japan-CGIAR partnership. The site could thus become the definitive Internet source of such information in the Japanese language.

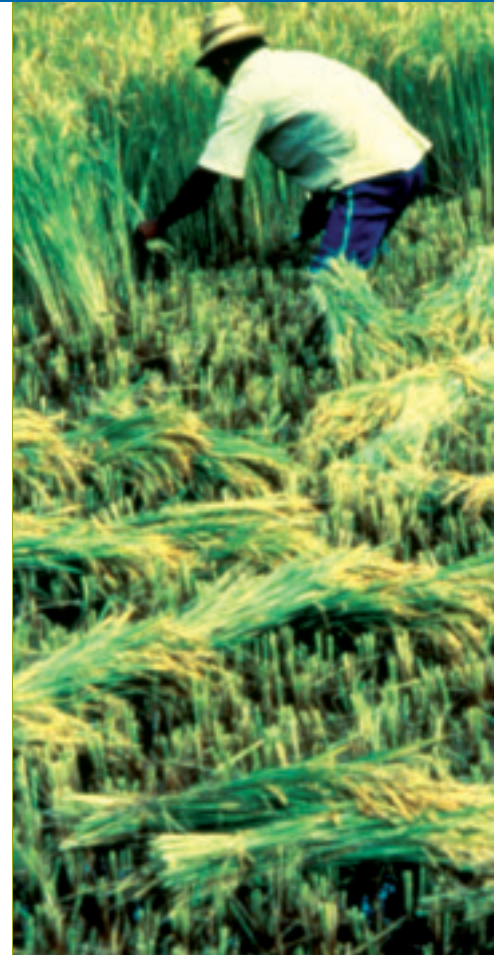
The CGIAR and government of Japan host a series of Robert S. McNamara Seminars named for the former World Bank president. The first two seminars took place in Tokyo on October 25, 2002, and July 2, 2003. The first seminar focused on the role of agriculture in sustainable development, and the second on the role of agriculture and agricultural research in generating growth and post-disaster reconstruction (see The role of agriculture and agricultural research below).

The Second Robert S. McNamara Seminar: *The role of agriculture and agricultural research*

In the next 30-40 years, demand for food will double. Already, almost half of all agricultural land is degraded. Finding solutions to the problems of hunger and poverty in the developing world is the major challenge of the 21st century. Agricultural research offers solutions.

Scientific breakthroughs like the CGIAR's development of Quality Protein Maize and New Rices for Africa are providing poor farmers with opportunities for change. Improved agricultural and natural resource management techniques, and the development of sound food and agriculture policies, offer further opportunities to achieve human security and prosperity.

Recent experience also demonstrates the benefits of investing in agricultural research to assist recovery after manmade and natural disasters. As agriculture is





the principal driver of many developing country economies, recovery in the agricultural sector is critical to regional or national recovery.

The second Robert S. McNamara Seminar showcased the impact of world class agricultural research in achieving growth and reconstruction and highlighted the value of international cooperation for the benefit of all. McNamara, a founding father of the CGIAR, spoke, and former Japanese Prime Minister Ryutaro Hashimoto delivered a keynote address on agriculture and human security. Other speakers highlighted the work of the CGIAR Centers with their partners and the Japanese contribution to relieving poverty and achieving growth and human security.

The annual call for fellowships in the Japan-CGIAR Fellowship Program is another good opportunity to announce CGIAR activities at Japanese universities that have agricultural divisions. Fellows should be encouraged to publicize CGIAR activities after finishing their fellowships. In addition, providing information on international agriculture to undergraduate students would greatly increase CGIAR awareness.

Since 1997, an international festival has been held annually in October in Tokyo's Hibiya Park. This festival is well known among Japanese students and young volunteers interested in international agriculture research. Many Japanese students visit the CGIAR booth to get information on CGIAR activities. The festival presents a good opportunity to increase awareness of the CGIAR among young Japanese scientists.

5. Conclusions

Strengthening the collaboration between the CGIAR and Japan will require the following actions:

- Japanese citizens — particularly stakeholders and scientists — need more knowledge and understanding of the work of the CGIAR Centers. The CGIAR must clearly explain its work and the benefits to Japan of the partnership, as well as the synergistic advantages to Japanese institutions and CGIAR Centers. This information can be conveyed through the Internet, seminars, international festivals and other means.
- A close relationship between the CGIAR Secretariat, J-FARD and Japanese members of CGIAR Center boards should be maintained.
- A close relationship and strong collaboration should be maintained between CGIAR Centers and Japanese agricultural research institutions.
- The CGIAR should aim to coordinate its efforts with Japan's bilateral program, including JICA's technical cooperation projects.
- Young Japanese scientists should have more opportunities to understand and work in the field of international agricultural research.
- As Japan aims to offer flexible and prompt responses to agricultural needs in developing countries, a single point of contact is needed, and the role of J-FARD is critical.
- The annual Liaison Meeting for the International Agricultural Research Institutions hosted by MAFF offers an opportunity to strategically strengthen the Japan-CGIAR partnership.
- The CGIAR Secretariat should play a key role in facilitating interaction between the CGIAR and Japanese institutions.





Endnotes

- ¹ Agriculture, Forestry and Fisheries Research Council, MAFF. 2004. “The International Research of Agriculture, Forestry and Fisheries for the Solution of Global Food and Environmental Issues”. Agriculture Research and Development Report No. 11. Tokyo.
- ² Available at www.ticad.net/whats_new.html.
- ³ MOFA website: www.mofa.go.jp/index.html.
- ⁴ MAFF website: www.maff.go.jp/eindex.html.
- ⁵ JIRCAS website: <http://ss.jircas.affrc.go.jp/index.html>.
- ⁶ JICA website: <http://www.jica.go.jp/english/index.html>.
- ⁷ Government of Japan. 2003. Japan’s Official Development Assistance Charter. Tokyo. (government translation) (www.mofa.go.jp/policy/oda/index.html)
- ⁸ Government of Japan. 2005. Japan’s Medium-term Policy on Official Development Assistance. Tokyo. (government translation)
- ⁹ Japan International Cooperation Agency. 2005. JICA Annual Report 2005. Tokyo. p. 103.
- ¹⁰ Japan International Research Center for Agricultural Sciences. 2005. JIRCAS Newsletter, Vol. 42. Ibaraki, Japan. pp 2-7. (<http://ss.jircas.affrc.go.jp/kankoubutsu/news/index.html>)
- ¹¹ JSPS website: <http://www.jsps.go.jp/english/index.html>.
- ¹² Ae N. Arihara J. et al. 1990. “Phosphorus uptake by pigeon pea and its role in cropping systems of the Indian subcontinent”. Science 248: 477-480.
- ¹³ J-FARD website: http://ss.jircas.affrc.go.jp/J-FARD/syuisyo_e.html
- ¹⁴ Agriculture, Forestry and Fisheries Research Council, MAFF. 2003. Promotional Policy for International Agricultural Research — Japan’s Role in Solving Food and Environmental Issues. Tokyo.

Abbreviations

CGIAR	Consultative Group on International Agricultural Research
CIAT	Centro Internacional de Agricultura Tropical (International Center for Tropical Agriculture), Colombia
CIFOR	Center for International Forestry Research, Indonesia
CIMMYT	Centro Internacional de Mejoramiento de Maiz y Trigo (International Maize and Wheat Improvement Center), Mexico
CIP	Centro Internacional de la Papa (International Potato Center), Peru
ICARDA	International Center for Agricultural Research in the Dry Areas, Syria
ICRISAT	International Crops Research Institute for the Semi-Arid Tropics, India
IFPRI	International Food Policy Research Institute, USA
IITA	International Institute of Tropical Agriculture, Nigeria
ILRI	International Livestock Research Institute, Kenya and Ethiopia
IPGRI	International Plant Genetic Resources Institute, Italy
IRRI	International Rice Research Institute, Philippines
ISNAR	International Service for National Agricultural Research, Netherlands
IWMI	International Water Management Institute, Sri Lanka
J-FARD	Japan Forum on International Agricultural Research for Sustainable Development
JICA	Japan International Cooperation Agency
JIRCAS	Japan International Research Center for Agricultural Sciences
MAFF	Ministry of Agriculture, Forestry and Fisheries
MDG	Millennium Development Goal
MOFA	Ministry of Foreign Affairs
NERICA	New Rices for Africa
NGO	nongovernmental organization
ODA	overseas development assistance
R&D	research and development
WARDA	Africa Rice Center (formerly West Africa Rice Development Association), Côte d'Ivoire





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June 2006

