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JIRCAS Newsletter for INTERNATIONAL COLLABORATION


APAARI – JIRCAS Expert Consultation on Assuring Food Safety in Asia-Pacific


In This Issue

JIRCAS
JAPAN INTERNATIONAL RESEARCH CENTER FOR AGRICULTURAL SCIENCES

Seeing the Tide

JIRCAS created the 'Research Information Division' when it reorganized in 1993 in order to collect and analyze information on targeted research areas and geographical regions. First-line researchers were recruited from every research area to populate the new division. For a small organization on a tight budget, nothing was more important than priority setting especially when dealing with an enormous target (i.e., the agriculture, forestry and fisheries sectors in developing regions). JIRCAS at that time was just like a small boat going out to the ocean. In 2001, JIRCAS became an Incorporated Administrative Agency in a process of reform initiated by the government and was given autonomous management capacity, further expanding the need for strategic studies. The 'Research Strategy Office' was established and is currently in charge of priority setting, taking relatively long-term perspectives into account.

Agricultural research is an applied science and technology development that should be conducted keeping the users of the results in mind. Research projects have to be designed, all the while foreseeing the process of how research outputs make real social impacts. This planning stage requires the identification of research needs (demand) and research seeds (potential). But this task is easier said than done. There are differences of opinions among experts in the same research area, and interdisciplinary experience and imagination are often needed. Besides, one must decide who should do the research. Sometimes, commercial-based researches are efficient and effective. In fact, a larger share of agricultural research and development investment is carried out by the private sector in developed countries. Every institute, public or private, has its strengths and weaknesses. Partnerships that connect research with business are strongly desired for innovation. JIRCAS, a government-funded public organization, has to contribute to the national interest and domestic policy objectives as a matter of course.

For this reason, JIRCAS grabs every opportunity to plan and host events that foster opinion exchange among experts inside and outside the country on future research directions. JIRCAS organizes annual international symposiums and chooses appropriate themes. The 'Expert Consultation on Assuring Food Safety in Asia-Pacific,' which this issue of the Newsletter features as a special topic, was organized as one of the many activities that contribute ideas and help shape priority setting. So far, food safety is not among the main targets of JIRCAS's research, and JIRCAS has not yet determined what role to play as the issue is rather complicated and concerns several other agencies. Nevertheless, the issue has surely increased the importance of public research as serious problems triggered by the sophistication of food production and processing, as well as complications related to food trade and distribution, have arisen. Rising income levels and deepening economic globalization have been altering agriculture in developing regions; hence, JIRCAS's role must be adjusted by contemplating where it is situated.

Since ancient times, the way to get important things done is to know 'the time of heaven, the advantage of land, and the harmony of people.' It is necessary to know one's position and role by checking the situations in the surrounding environment. Seeing the tide is particularly important in this world characterized by rapid changes. JIRCAS has to identify its future direction by looking back at the past and grasping the changes that are happening. Having said that, however, one should not forget the fact that a continuous and step-by-step effort is necessary for research. A low-profile research that has been left unmarked for decades may suddenly come under the spotlight. Seeing the tide is not the same as following the stream. Moving from one direction to another in a superficial fashion has nothing to do with a strategic attitude. Achieving real social impacts based on science requires a sober and steady viewpoint that can see the tide, which is why the Research Strategy Office is conducting strategic analyses from a long-term standpoint.

Osamu Koyama
Director
Research Strategy Office

APAARI-JIRCAS Expert Consultation on Assuring Food Safety in Asia-Pacific

An expert consultation on food safety was held at the JIRCAS International Conference Room on August 4-5, 2014. Representatives from international organizations, such as the Asia-Pacific Association of Agricultural Research Institutions (APAARI), the Food and Agriculture Organization of the United Nations (FAO), and the Consultative Group on International Agricultural Research (CGIAR), and from national food safety agencies in Chinese Taipei, India, Malaysia, Pakistan, Philippines, Sri Lanka, Thailand, and Japan participated in the meeting.

In most developing regions, the lack of infrastructure and technical expertise has been a serious problem and has weakened the effective implementation of food safety regulations. International cooperation in information exchange and capacity building has been insufficient as well. Taking these things into account, we believe that the expert consultation was a good opportunity to exchange information on the conditions of each country and promote regional and subregional cooperation with the support of international organizations.

In the Opening Session, welcome addresses were delivered by Dr. M. Iwanaga, president of JIRCAS, and Dr. J. K. Karihaloo, APAARI coordinator. The opening remarks were given by Mr. A. Endo, director of International Research Division, the Agriculture, Forestry and Fisheries Research Council Secretariat (AFFRC), MAFF.

The consultation consisted of five sessions, and each session consisted of reports, a discussion part, and a session theme wrap up.

In Session I, three keynote speeches were presented. First, Dr. V. Prakash, of the Council of Scientific and Industrial Research, India, discussed food security and safety issues in the Asia-Pacific region. He stated the importance of scientific knowledge in addition to traditional knowledge, and emphasized the role of scientific evidence. Next, Dr. K. Isshiki, of Japan Food Research Laboratories, explained that risk analysis consists of three components: risk assessment, risk management, and risk communication. He added that interactive exchange of information and opinions concerning risks is needed throughout the management process. He also introduced several contamination and food poisoning cases. Finally, Dr. S. Sarren, of the FAO, presented schemes to strengthen food safety initiatives in the region.

In Session II, eight country status reports were presented by representatives from India, Japan, Malaysia, Pakistan, Philippines, Sri Lanka, Chinese Taipei, and Thailand. Each representative reported their respective risk monitoring systems and realistic regulations to manage food safety. It was also mentioned that international collaborations involving the participation of intergovernmental organizations such as the FAO are essential.

In Session III (Day Two), issues and scientific advances in specific commodities were introduced by experts. Dr. K. Makita, of the International Livestock Research Institute (ILRI), presented food safety issues related to animal-source foods. Dr. A. L. Acedo, of the World Vegetable Center (AVRDC), presented technologies and innovations that raise the role of vegetables for improved health and global poverty alleviation. Dr. P. K. Singh, of the International Maize and Wheat Improvement Center (CIMMYT), presented breeding efforts to develop mycotoxin resistance in wheat and maize.

In Session IV, international initiatives were introduced and exchange of opinions on this issue took place. Dr. M. Singh, of the Food Safety and Standards Authority of India, explained the Codex Alimentarius and its harmonization. Dr. K. K. Sharma, of the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), presented the relationship between biotechnology and food safety issues. Dr. K. Nakahara, of JIRCAS, introduced the JIRCAS research project on advanced application of local food resources. He also presented the Food Research Network of Asia, a JIRCAS initiative that was designed and established for the efficient utilization of indigenous food resources.

In Session V (Group Discussion), participants' opinions regarding priority issues related to food safety were expressed, and all ideas were summarized. Toward the conclusion of the session, there was a consensus that food safety issues are closely related with food security and nutrition security, and that food safety issues cannot be resolved by

any one country acting alone, hence international cooperation is indispensable. Finally, priority areas were identified and recommendations were proposed as follows:

- In each country, control systems for export as well as domestic standards are important. Identifying and documenting food safety indicators for the region are also essential.
- Science-based assessment of traditional foods and documentation of traditional food resources are important areas for developing standards.
- Industry involvement is important, and government and international organizations should continue to make efforts to build consumer trust on food safety issues.
- On the food control system and risk management aspects, data is an important component of food control systems in making evidence-based decisions.
- Laboratories in the region will play a very important part in dealing with emerging risks, and sharing of information among them is an important focus area. Quick test methods for detection of pathogens need to be developed and shared among countries.
- Studies and analysis are needed on how to drive research and development to create products that can be taken successfully to the markets.

Through this summarization process, the importance of research institutions has become clear. For research institutions, such tasks should be undertaken to show scientific data on food properties and food processing. This data will contribute to policy making and help set standards on food safety. As regards JIRCAS's mission, it was confirmed that the aforementioned activities are essential tasks for assuring food security, for promoting ongoing project on food resource utilization, and for the standardization of food analysis and quality through the Food Research Network of Asia.

Photo 1: A scene at the opening session

Photo 2: A group photo of the participants

Photo 3: A discussion following Session II (Country Status Reports)

Masayoshi Saito
Program Director
Rural Livelihood Improvement Program
JIRCAS

Food Safety Measures and Related Matters

Protecting public health by ensuring food safety is primarily a government responsibility. However, other stakeholders also have obligations to contribute to food safety and security. To fulfill their respective roles, everybody--from farmer to consumer--should learn and implement food safety measures based on science. Food safety information, therefore, should be shared among stakeholders, including consumers, food business operators, and others from various fields.

A series of problems occurring from the 1980s, such as the bovine spongiform encephalopathy (BSE) or "mad cow" incidents, among others, have shaken public trust in food safety. This has led to the restructuring of frameworks for food safety regulation in many countries. A new system has since been established based on the internationally acknowledged concept of "risk analysis," whose principle is to scientifically assess the risks and develop necessary measures based on the assessment. Risk analysis consists of three components: 1) risk assessment, for assessing risks scientifically, 2) risk management, for implementing necessary measures based on risk assessment, and 3) risk communication, for exchanging information and opinions among members, such as risk assessors and managers, consumers, and business operators.

Another concept is the "food chain approach," whose principle is to strengthen every link in the food chain by checking the actual food production process at every stage, from farm to table. Hence, both "risk analysis" and "food chain approach" are necessary to ensure food safety.

We currently have a complicated problem related to food safety; it concerns the trio of food safety, food security, and food defense. Countermeasures to food terrorism have to take human factors (i.e., trust issues) into consideration. In Japan, we have had two intentional food poisoning incidents involving pesticide-laced frozen foods: one causative frozen food was imported, while the other was domestic. These are criminal acts. Admittedly, it is very difficult for us to protect not only our food factories but also our food chain from farm to table.

Basic food safety measures harmonized with the Codex recommendations, such as the General Principles of Food Hygiene, have been adapted into law in many countries. In Japan, consumers are being informed about food safety risks as described in the following articles under Chapter 1 (General Provisions) of the Food Sanitation Act.

Article 5: Food shall be prepared in a clean and sanitary manner

Article 6: Unsafe food shall not be sold

Article 7: Newly developed food items shall not be sold without government approval

Article 9: Sales of diseased livestock and meat shall be prohibited

Article 10: Sales of food additives shall be restricted by government

Article 11: Criteria for handling methods and standards for food shall be established

Severe outbreaks have been reported, mainly from developed countries. Notorious causative agents include *Escherichia coli* O157:H7, norovirus, and others. In Japan, eight persons have been killed by *E. coli* O157:H7 infection after eating non-fermented vege-pickles (*asazuke*) in 2012. In recent years, medical doctors in Japan have been reporting more than 10,000 cases of food-borne norovirus outbreaks each year.

These events signal the emergence of a new food safety risk. The large 2011 *E.coli* O104:H4 outbreak centered in Germany resulted in at least 54 deaths, more than 850 cases of hemolytic uremic syndrome, and 4000 illnesses. The outbreak was linked to the consumption of fenugreek sprouts, with results of the epidemiological investigation suggesting that the seeds were contaminated with a pathogen that grew during sprout production. In 2011, five people died in Japan after eating raw-beef dish (*yukke*) contaminated with *E. coli* O111:H8. These infectious pathogens can make people sick or dead if taken even in small quantities with food. To prevent food poisoning, everybody should contribute to keep our food chain clean from farm to table. One basic and key countermeasure would be to recognize that there are active pathogens near us and that they can enter our food chain. Another countermeasure would be to improve risk communication, which is very important in exchanging information about infectious food poisonings.

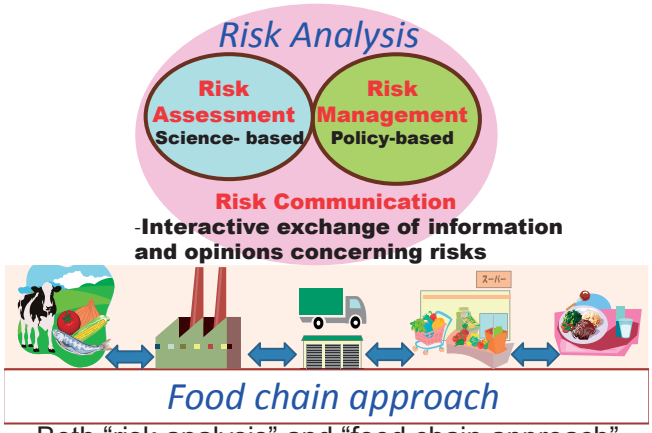


Fig. 1. Concepts for ensuring food safety

Kenji Isshiki
Japan Food Research Laboratories

Expert Consultation on Assuring Food Safety in Asia-Pacific

The Asia-Pacific region, encompassing 41 countries of Southeast Asia, South and Southwest Asia, Central Asia, East Asia and Pacific islands, is a very significant producer and consumer of agricultural food products. Some of the countries are also among the world's top importers of agricultural commodities. Hence, the region has a large stake in ensuring food safety for the health of its people and for acceptance of its produce in international trade.

Reducing the risk of unsafe food involves preventing contamination throughout the food chain from farm to the table. Adoption of intensive crop and animal production practices leading to greater vulnerability to contamination as well as the use of pesticides, antibiotics and animal growth promoting hormones has increased the potential health risks from food. More challenges are being posed by newer practices like organic agriculture, adoption of genetically modified foods and nanotechnology in agriculture, food additives and even food adulteration. Market globalization leading to expanding international trade in raw and processed food items has increased the chances of spread of food-borne diseases and, hence, the challenges to food safety authorities. Outbreaks of food-borne diseases are reported frequently from countries of this region. During recent years, large incidences of cholera, anthrax, salmonella and streptococcus were reported from India, Malaysia, Vietnam, Pakistan and Myanmar. In early 2014, hundreds of children in Japan fell sick due to suspected norovirus food contamination.

Asia-Pacific Association of Agricultural Research Institutions (APAARI) is an association of national agricultural research systems (NARS) of Asia-Pacific countries with the mission to promote the development of NARS through facilitation of inter-regional, inter-institutional and international partnerships. APAARI has a membership of 55 organizations including regional NARS, CG centres, universities and private seed sector. The biotechnology programme of APAARI, the Asia-Pacific Consortium on Agricultural Biotechnology (APCoAB), serves as a neutral forum to deliberate on policy issues in biotechnology and biosafety, promote public awareness, and facilitate human resource development for meaningful application of biotechnology to enhance agricultural productivity as well as product quality for the welfare of farmers and consumers.

In pursuance of its mandate to assist member countries and other stakeholders in developing appropriate agricultural research and development policies and programmes, APAARI in collaboration with JIRCAS organized "Expert Consultation on Assuring Food Safety in Asia-Pacific" at JIRCAS, Tsukuba on 4-5 August 2014. The objective was to deliberate on recent developments on science and regulation of food safety, identify country level gaps in effective implementation of food safety measures, and set priorities for regional and sub-regional cooperation.

The expert consultation was attended by 23 participants from nine countries representing policy makers and scientific experts from national agricultural research systems, CG centers and universities. Presentations on global and country status of food safety research and management were made and discussions held on regional food safety issues and actions required to solve them.

Although the consultation was specifically related to food safety, it was emphasized that food safety has a very close relationship with food security, nutrition security and sustainability and the relationship should be well understood for the overall impact of this important subject on the food scenario.

Recommendations were made under items: (i) Policy and standards, (ii) Traditional foods, (iii) Stakeholders involvement, (iv) Food control systems – risk management aspects, (v) Laboratories, (vi) R&D, (vii) Farm level good agricultural practices (GAP), (viii) GM foods, and (ix) Others. In addition, areas of collaboration of National/regional level were identified which included suggestions for increasing coordination between competent authorities within countries, creation of information network for knowledge sharing, Rapid Alert System for Food and Feed, and resource sharing. A Programme to strengthen food safety for non-packaged foods was identified as an important area for regional collaboration.

Dr. Jawahir L. Karihaloo
Coordinator
Asia Pacific Association of Agricultural Research Institutions (APAARI)

Food Safety Issues and Scientific Advances Related to Animal-source Foods

Every year, 2 billion cases of diarrhea occur across all age groups worldwide, with 700,000 children aged five and under dying as a result. Animal-source foods provide nutrition but are a major cause of food-borne diseases (FBDs), including severe non-diarrheal illnesses such as tuberculosis and brucellosis.

In developing countries, most foods are sold through informal markets, which often lack adequate hygiene management. However, these informal markets are economically important because it provides affordable food to the poor and market opportunities to smallholder farmers and other value chain actors.

Since 2008, the "Safe Food, Fair Food" project run by the International Livestock Research Institute (ILRI) has proven, through 24 studies in eight sub-Saharan African countries, that the concept of participatory risk analysis is useful in improving food safety in informal markets while ensuring market access for smalholder farmers. In this risk analysis, participatory methods were applied to understand the following: level of exposure to pathogens, traditional risk reduction behavior, communication with stakeholders of food safety, and education of smallholder farmers and actors along food value chains (Photo). Participatory risk analysis worked very well in quantifying risks and identifying better policy support options even in data-scarce environments. This project is still in progress and currently in its second phase, which started in 2012.

The methodology has already been adopted in Asia. In Vietnam, risk analysis of pathogens derived from consuming pork produced by smallholder farmers has started. Integration of economic analysis into risk assessment is also being applied to identify incentive-based hygiene control options. Furthermore, participatory risk analysis is expected to improve the hygiene of affordable foods as well as the livelihoods of actors along animal-source food value chains in Asia and Africa.

Photo : Milk traders in Ghana quantify milk distribution using matches on a map drawn on the ground (Safe food, fair food project (ILRI)).

Kohei Makita[1,2] and Delia Grace[1]

[1]International Livestock Research Institute (ILRI), Kenya

[2]Rakuno Gakuen University, Japan

Asian Food Resource Network and Safety Evaluation

Thousands of local food resources including indigenous plants, animals, insects, and traditional fermented foods have been consumed by Asian people since ancient times. They are not only produced in agricultural fields or farmers' backyards but also collected from nature. Most area-specific fermented foods are not distributed to distant places. To date, scientific information on these local food resources has yet to be fully accumulated. However, some recent scientific studies have indicated that these regional food resources have high potential to become sources of useful microorganisms and functional components that provide health benefits, and it is expected that technological keys in the traditional food processing methods will be scientifically unlocked. These traditional technologies could be applied to develop new processed food products. At the same time, novel effective functional compounds and useful enzymes could be developed from among the components of regional foods made from indigenous materials or metabolites of unique microorganisms. Additionally, comprehensive analytical data on chemical composition and microorganism may help resolve food safety issues.

Based on these backgrounds, JIRCAS together with its Asian counterpart organizations agreed to launch the 'Food Research Network of Asia' for the efficient utilization of indigenous food resources. The agreement was reached under a joint declaration signed in Bangkok in 2013. Members of the network have started keeping close communication by sharing their knowledge on major issues concerning food research, particularly food processing technology and physiological functionality of traditional food resources. Discussions on how to extend the network's activities to the private sector in each country were held during the annual meetings in 2011 - 2013 (in Thailand and China). Among the network's activities is the construction of databases on indigenous foods of each region in Asia. These databases will be uploaded to the web.

At the same time, JIRCAS will implement extensive projects, such as the "Advanced Application of Local Food Resources in Asia," and re-evaluate previous empirical data, bearing in mind that its research outputs will be used in the industries. A group of researchers from JIRCAS, Kasetsart University (Thailand), and Laos University elucidated the regional differences and time-dependent transition of bacterial and fungal species (e. g., lactic acid bacteria) living in fermented fish produced in Indochina by analyzing DNA via denaturing gradient gel electrophoresis (DGGE) method. On the subject of food processing, researchers from JIRCAS and China Agricultural University developed a new and efficient coagulant agent to produce a Chinese-style tofu. Electron spectroscopic characterization of sticky rice from Japan and Thailand was carried out to understand the properties of water-soluble polysaccharides, which are expected to be used for various food processing techniques.

It is worth noting that there are almost no international nor domestic standards for food (mostly unpackaged) that are produced and consumed in specific areas (i.e., local food resources). In the past, pre-treatment of local vegetables used as raw materials for making health products in Southeast Asia had been insufficient, and particular components that might be hazardous to health had been ingested unknowingly.

At the final session of the "JIRCAS-APAARI Expert Consultation on Assuring Food Safety in Asia-Pacific," many participants pointed out the importance of local food resources. The necessity of gathering scientific data and establishing standards for proper safety evaluation of these local food resources were also discussed. The agenda of this meeting and those of the JIRCAS Food Resource project and network activities are closely related. JIRCAS is expected to contribute to improving food safety in Asia by sharing information and solving problems through collaborative activities with joint research institutions and a variety of other channels.

Kazuhiko Nakahara
Biological Resources and Post-harvest Division
Project Leader

JIRCAS TODAY

JIRCAS staff honored by the Japanese Society for Tropical Agriculture

Dr. Naoko Kozai, researcher of the Tropical Agriculture Research Front, received the Research Encouragement Award from the Japanese Society for Tropical Agriculture in a ceremony held on March 27. She received a certificate commending her research on "the reproductive physiology of peach and durian under unsuitable temperature conditions."

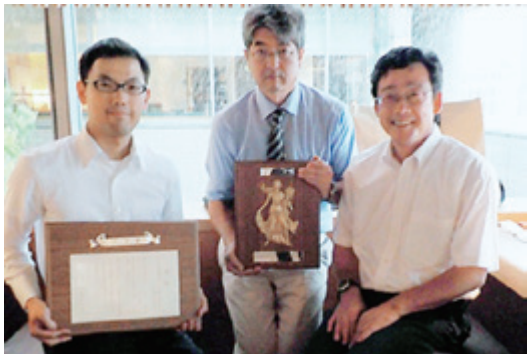
Dr. Kozai conducted morphological observations and elucidated the factors affecting fruit failure, which has become a problem in the field. The results of her research were recognized for providing important guidance toward the stable production of durian in tropical lowlands and of deciduous fruit trees such as peach in tropical highlands.

JIRCAS-TARF researcher Dr. Naoko Kozai receives the award certificate from the chairman of the Japanese Society for Tropical Agriculture.

Minister of the Environment Award and Award for Excellence

A group that included Dr. Satoshi Tobita of JIRCAS's Crop, Livestock and Environment Division, Associate Professor Ueru Tanaka of the Research Institute for Humanity and Nature (RIHN), Assistant Professor Kenta Ikazaki of Tokyo Metropolitan University, and Associate Professor Hitoshi Shinjo of the Kyoto University Graduate School of Global Environment, was conferred the Minister of the Environment Award and the Award for Excellence at the 41st Environmental Awards for their research titled "Agricultural practice enabling both control of desertification by wind erosion and improvement of crop production."

The event, organized by the Ministry of the Environment and sponsored by the Hitachi Environment Foundation, was held in Tokyo on June 11.

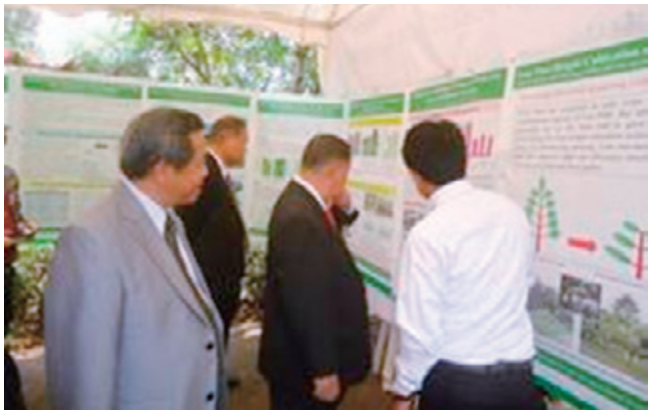


Dr. Satoshi Tobita of JIRCAS (center) holds the Award for Excellence plaque while Assistant Professor Kenta Ikazaki of Tokyo Metropolitan University poses with the Minister of the Environment Award plaque. At right is Associate Professor Ueru Tanaka of the Research Institute for Humanity and Nature.

Certificate of appreciation for JIRCAS's Indochina rural project at the 15th anniversary celebration of the Lao National Agriculture and Forestry Research Institute

The Lao National Agriculture and Forestry Research Institute (NAFRI) celebrated its 15th anniversary on April 9-10 at the institute premises with a series of activities, including the presentation of a certificate of appreciation to JIRCAS for its Research Program C flagship project, titled "Indochina Rural Development Project." JIRCAS has been in collaboration with NAFRI on the Indochina rural project, which includes interdisciplinary research activities in agriculture, forestry, animal husbandry, and fisheries, since its launch in 2011. The certificate was presented by NAFRI Director Bounthong Bouahom to Project Leader Masuo Ando in a simple ceremony. In addition, Dr. Borviengkham Vongdala, director-general of the Science and Technology Agency, and Mr. Vilayvan Phomke, minister of Agriculture and Forestry, visited JIRCAS's exhibition booth, with Laotian researchers explaining the project to the high-ranking government officials.

NAFRI Director Bounthong Bouahom presents the certificate of appreciation to Project Leader Masuo Ando.



A Laotian researcher explains the project to Dr. Borviengkham Vongdala, director-general of the Science and Technology Agency, and Mr. Vilayvan Phomke, minister of Agriculture and Forestry, at JIRCAS's exhibition booth.

Ethiopia's Minister of Agriculture visits JIRCAS

Ethiopia's Minister of Agriculture Tefera Derebew, together with Ethiopia Investment Agency Director General Fitsum Arega and other stakeholders, visited JIRCAS on May 30.

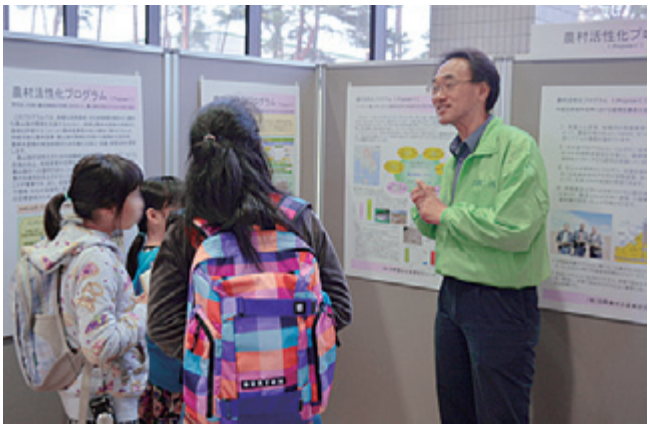
JIRCAS officials welcomed the delegation, and the group watched a presentation introducing JIRCAS's activities and programs. Afterwards, there was an exchange of views and opinions, with emphasis on research related to rice production and climate change in Africa.

JIRCAS officials together with the Ethiopian delegation

Open House 2014 (Tsukuba)

The annual open house was held on April 18-19 (Fri-Sat) to introduce and promote JIRCAS's agricultural research. Main activities included research poster presentations, tropical fruit tasting and replica exhibit, guided tours of the shrimp culture facility, electron microscope observations, traditional/international costume-fitting, and seedling giveaway (hibiscus and pineapple).

There were three mini-lectures on the 18th, each focusing on JIRCAS's main research themes. The speakers fielded questions from the audience after the lectures, and quiz games were played. The mini-lectures were supplemented by panel displays and exhibits while researchers interacted with visitors, mostly students who were eager to learn about the research activities and contents of each research program.



A researcher explains as young visitors listen.

Mini-lecture

Visitors trying on traditional/international costumes

Light, feathery seeds "float" when dropped from a height.

JIRCAS researcher speaks at the 2014 Women in Business Summit

Dr. Marcy Wilder, senior researcher of the Fisheries Division, attended and spoke at the 2014 U.S.-Japan Council (USJC)-American Chamber of Commerce in Japan (ACCJ) Women in Business Summit held at the ANA InterContinental Hotel in Tokyo on May 27.

The summit was aimed at creating a network and support system comprised of women's organizations from across Japan that would work together to advance women in the workplace. The all-day event featured panel discussions, workshops, lectures, and networking activities. U.S. Ambassador Caroline Kennedy opened the summit, and Prime Minister Shinzo Abe followed with a keynote speech.

Dr. Wilder spoke during the breakout session titled "Women in STEM (Science, Technology, Engineering, and Mathematics)." She was joined by Naoko Yamazaki (former astronaut at JAXA), Sayaka Ito (account manager at Dow Chemical Japan, Ltd.), and Rebecca K. Green (senior consultant at ERM Japan Co., Ltd.).

Breakout Session: Women in STEM (from left: Rebecca K. Green, Sayaka Ito, Marcy Wilder, and Naoko Yamazaki)

Biomass Expo 2014

"Smart Community Japan 2014," an annual international conference focused on advanced global initiatives and activities, was held on June 18-20 (Wed-Fri) at Tokyo Big Sight, with JIRCAS being a major participant at the 2014 Biomass Expo.

At the Biomass Expo Forum on June 19th, JIRCAS Project Leader Akihiko Kosugi conducted a lecture about ongoing research, titled "Efforts toward industrialization and conversion technology development of biomass resources in Southeast Asia," to a standing-room only crowd. In addition, JIRCAS had set up an exhibit booth showcasing its joint research with IHI Environmental Engineering.

Lecture on biomass by Project Leader Akihiko Kosugi

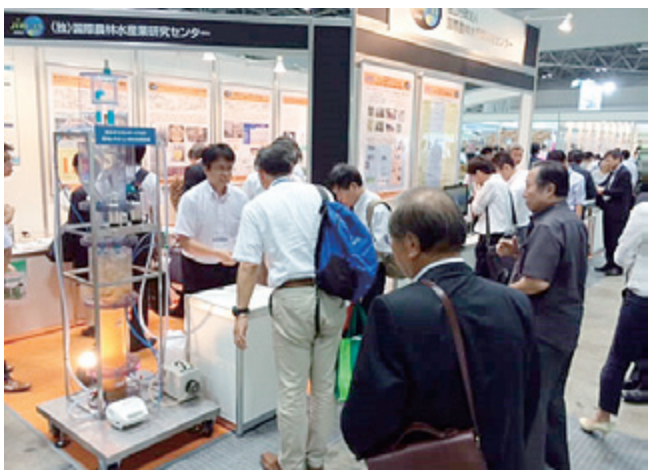


Exhibit booth showing joint research with IHI Environmental Engineering

Open House 2014 (TARF)

JIRCAS's sole substation, the Tropical Agriculture Research Front in Ishigaki, Okinawa Prefecture, held its open house on June 29. The annual event publicizes JIRCAS's research through exhibits and presentations. The weather was great throughout the day, with 806 guests (577 adults, 229 preschool and elementary students) in attendance. Highlights included mini-lectures, an agricultural machine exhibit, and table displays of tropical fruit trees, rice, sugar cane, leguminous crops, and West African traditional crops. Among the popular events were the Netsu-ken quiz, ethnic costume-fitting, and vannamei exhibit, as well as other fun activities such as brown sugar and pineapple tasting, stamp rally, and flower picking.

Open House 2014 at JIRCAS-TARF in Okinawa

Technical tie-up (Press release)

An agreement to conduct joint research on developing environmental technologies in the palm plantation business has been concluded between JIRCAS and IHI Environmental Engineering. The agreement covers joint research on processing technology and new technology development, as well as future opportunities (prospects, commercialization, etc.).

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