ISSN 0919-8822
September 2018
No.84

JIRCAS Newsletter

for

INTERNATIONAL COLLABORATION

Palm trees line the main entrance to TARF.

Special Feature: Tropical Agriculture Research Front (TARF)

JIRCAS
JAPAN INTERNATIONAL RESEARCH CENTER FOR AGRICULTURAL SCIENCES

Bridging Agricultural Research Ties between Japan and Developing Tropical Island Nations

The Japan International Research Center for Agricultural Sciences (JIRCAS), as the country's representative research institute for international agriculture, forestry and fisheries, has been contributing to the development and promotion of improved agricultural technologies for adoption in tropical, subtropical or the other developing regions.

Based on the Fourth Medium to Long-Term Plan (FY 2016 to 2020) and the Basic Plan for Agriculture, Forestry and Fisheries Research (determined by the Agriculture, Forestry and Fisheries Council on March 31, 2015), three programs, namely, "Development of agricultural technologies for sustainable management of the environment and natural resources in developing regions," "Technology development for stable production of agricultural products in the tropics and other adverse environments," and "Development of high value-adding technologies and utilization of local resources in developing regions," were categorized as important. These programs have been allocated a high budget, and are being implemented with research management innovation to achieve high social impact.

JIRCAS (headquartered in Tsukuba) together with its sole substation, the Tropical Agriculture Research Front (TARF) in Ishigaki, was first established in 1970 as the Tropical Agriculture Research Center (TARC). TARF is also called "Nekken," a term of endearment used by Ishigaki citizens.

Ishigaki Island where TARF is located has the following geographical coordinates: from 24°21′ to 24°35′ N and from 124°05′ to 124°20′ E. It is about 2,800km to Tokyo, 1,200km to Kagoshima, 410km to Naha, and 280km to Taiwan, and is the center of the Yaeyama island chain at the southern edge of Ryukyu archipelago. A rich ecological zone is well conserved, running continuously from the coral reefs on the seaward side to Mt. Omoto-dake (elevation: 526m), the highest mountain in Okinawa. Its humid subtropical (temperate marine) climate and island environment is similar to JIRCAS research sites abroad. Annual mean temperature is 24.3 °C and annual mean rainfall is 2,107mm. Ishigaki Island, however, sometimes experiences seasonal water shortage. Conversely, typhoons hit the island several times a year, supplying water but also causing excessive salt damage to crops on several occasions.

TARF's location has geographical advantages such as a subtropical climate and an island environment. It comprises 21 hectares of experimental fields, several types of greenhouses, and open research facilities including lysimeters. These advantages and facilities enable us to implement basic and fundamental researches and create improved agricultural technologies that can be adopted by developing countries in the tropics/subtropics and island environments where such researches are difficult to conduct.

Under the Fourth Medium to Long-Term Plan, we conduct research on tropical crops, specially focusing on the following: a) development of a sustainable sugarcane cultivation system that can reduce nutrient leaching to underground using the lysimeters at TARF, b) development of a sustainable taro cultivation technology that can reduce soil erosion with artificial sloping fields, c) gene modification or development of breeding materials with rice, sugarcane, and tropical fruit germplasm resources conserved at TARF, and d) addition of profitable characteristics into rice cultivar through gene modification or genome editing.

Lastly, one more thing that we should mention is TARF's contribution to domestic agriculture. We have been accelerating generation advancement in rice and wheat, crossing sugarcane, and conserving and managing germplasm (of tropical fruit, sugarcane and the other crops) for effective breeding. We have also been breeding snap beans, papaya, passionfruit, and grasses for pasture targeting the Ryukyu (Nansei) Islands.

Therefore, as the Ministry of Agriculture, Forestry and Fisheries' sole national institute devoted to agricultural research in tropical and subtropical areas, TARF makes a core contribution to both domestic and international agriculture, and we hope that this issue of the newsletter provides meaningful information about our research activities.

Hide Omae
Director
TARF, JIRCAS

Reducing Fertilizer Input in Sugarcane Cultivation to Reduce Nitrogen Loads to Underground Systems

Sugarcane is cultivated under various land use conditions and environments, such as tropical/subtropical islands, continental areas, and so on. The Japan International Research Center for Agricultural Sciences (JIRCAS) conducts research on the effective use of nitrogen fertilizer for sugarcane cultivation in Asian islands such as Negros Island in the Philippines and Ishigaki Island in Japan where the lone JIRCAS substation, the Tropical Agriculture Research Front (TARF), is located. In this article, we introduce our efforts to reduce fertilizer application in sugarcane cultivation at Negros and Ishigaki Islands, and discuss the results we have obtained from previous research.

The northern part of Negros Island is a typical sugarcane mono-cropping area. The residents depend on both surface water and groundwater but the concentration of nitrogen (nitrate nitrogen) in this groundwater is close to reaching the 10 ppm upper limit of permissible nitrate nitrogen in drinking water. Drinking water containing high concentrations of nitrate nitrogen is harmful to people and can cause health problems. In addition, based on interviews with local farmers, we learned that the application rate of nitrogen fertilizer in sugarcane in these fields is about 200 kg N/ha, which is much higher than in other areas. Because rainwater and dissolved fertilizer penetrate the soil, we looked at the possibility that the nitrogen contained in fertilizers also flowed underground.

Therefore, we observed the leaching (load) of nitrogen fertilizer underground using the lysimeter facility at TARF. A lysimeter is a bottomed cultivation tank surrounded by a concrete frame. By sampling the penetrating water from this bottom part, it is possible to investigate fertilizer components in the penetrating water. In Miyako Island (a neighboring island northeast of Ishigaki), there was a report that fertilizer application in sugarcane fields was concentrated in the early stage of growth, and that the applied fertilizer was considered wasteful because nitrogen absorption capacity of sugarcane in the early growth stage was only slight. Similar results were obtained during nitrogen leaching observations in Ishigaki using a lysimeter (Photo), where we reduced the nitrogen load to the underground by decreasing fertilizer (basal fertilizer) application in the early growth period of sugarcane.

Nitrogen fertilization was split into basal fertilizer and second fertilizer, and our results showed that nitrogen load to the underground can be reduced. We also found that decreasing the amount of basal fertilizer application did not significantly affect the decline in yield.

Based on the results obtained in these experiments, we started observing the leaching rates and conducted fertilization experiments using nitrogenous fertilizers in Negros, and we will try to validate that basal nitrogen fertilizer leaches underground and that the reduction of basal nitrogen fertilizer application does not significantly affect the decrease in sugarcane yield.

At this point, I would like to propose that these results be considered as a new sugarcane fertilizer management technology, and I would like to work on spreading the outcomes of this research to the sugarcane industry and sugarcane farmers as well as government agencies.

Shinkichi Goto
Tropical Agriculture Research Front

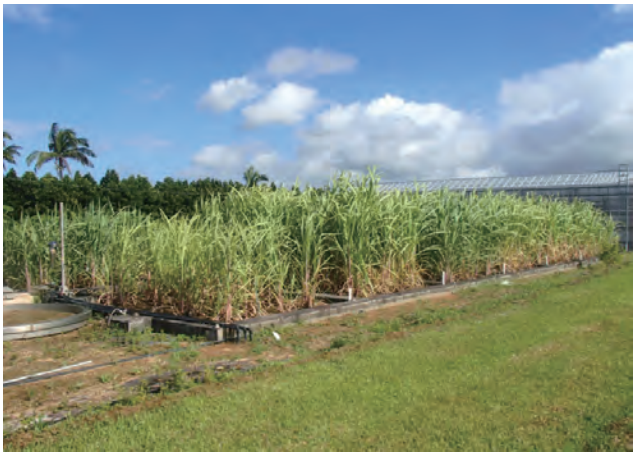


Photo. Observation of nitrogen fertilizer leaching and nitrogen absorption by sugarcane using lysimeters located at Tropical Agriculture Research Front in Ishigaki Island.

Development of Countermeasures to Reduce Soil Erosion Using an Artificial Sloping Field

Among all users of available freshwater on Earth (about 3.9 x 10^9 tons per year), agriculture is by far the largest consumer. Seventy percent of freshwater withdrawals from surface water and groundwater sources are for agricultural usage, and 70% of this volume is consumed in Asian countries. Freshwater resources should be conserved well as a global public property and sustainably maintained through development of effective utilization technologies for agricultural production. For this reason, JIRCAS implements research for development of sustainable resource management measures that combine agriculture, forestry and fisheries production with environmental and ecological conservation. We are targeting two areas for this research: the dry, salinized areas like in North India and the humid island areas like in Palau.

An artificial field is located at the corner of the open facilities of JIRCAS-TARF, providing optimal field conditions for conducting research and development of sustainable crop cultivation systems to prevent soil degradation caused by soil erosion. The experimental field is comprised of surfaces sloping at 2, 3.5, and 5 degrees (Photo 1). The length of the slope is 15m while its width is 30m. Each surface is subdivided into 4.2-meter-wide plots and utilized for the experiments.

During rainfall, some of the rainwater percolated into the lower soil layer while other portions became runoff water. Soil volumes were measured automatically using a turbidimeter and a water-level gauge, and manually using collection boxes. For manual measurements, the percolated rainfall was partially collected and stored in a receiver buried at a depth of 60cm. The stored water was analyzed for chemical components after each rainfall event.

Since constructing the sloping field, we have conducted research works and achieved good results specifically on the cultivation of leguminous cover crops such as mucuna and hairy vetch, which helped reduce soil erosion caused by surface runoff, as well as on sorghum and maize cultivation. Furthermore, we were able to assess its effectiveness as water management and weed control strategies.

We are currently launching a new research activity using the sloping field to develop a sustainable crop cultivation system in Palau, an island-nation in the western Pacific Ocean whose climate is similar to that experienced by Ishigaki Island (Photo 2). However, Palau's small size, rising urbanization and tourism activities, and extensive agriculture increase the risk of harmful effects on coral ecology in the shallow sea zone. To solve such problems, we are focusing on "conservation agriculture," defined by FAO as composed of three basic principles, namely: minimal or partial tillage, mulching with organic materials, and multiple cropping systems (rotation with leguminous crop, intercrop, relayed crop and so on). We expect that applying these basic concepts of conservation agriculture on fruit or other crop production systems, and modifying it depending on the real situation abroad, can contribute to soil conservation by reducing soil erosion and nutrient leaching into water systems.

Hide Omae
Director
Tropical Agriculture Research Front

Photo 1. Artificial sloping field at TARF.
Eighteen sections comprising six plots (15m length, 4.2m plot width) at three different slopes (2º, 3.5º, and 5º) were set up.

Photo 2. Soil flowing out of a section of the sloping field due to rainfall.
A large amount of soil flowed out due to rain when plowing was performed/no mulch was applied (left), but the amount of eroded soil was less when partial plowing was performed/organic mulch was applied (right).

Breeding of Tropical Fruits for the Southwest Islands of Japan Using Genetic Resources at JIRCAS-TARF

The Tropical Agriculture Research Front (TARF), the sole substation of Japan International Research Center for Agricultural Sciences (JIRCAS), is located in the island of Ishigaki in Okinawa Prefecture, performing agricultural research activities for tropical and subtropical crops including tropical fruit trees. Its favorable geographic location and subtropical climatic condition allow it to be the only national research and development agency in Japan that conducts on-site studies and genetic resource conservation of tropical fruits.

To utilize such genetic resources, JIRCAS-TARF has been breeding tropical fruits such as pineapple, papaya, and passionfruit. The Tropical Agriculture Research Center (TARC), the predecessor of JIRCAS, started pineapple breeding in 1972 and ended in 1989. The Okinawa Prefecture Agriculture Research Center (OPARC) took over the breeding program, including the utilization of genetic resources and breeding materials. OPARC registered the 'SOFT TOUCH' and 'HONEY BRIGHT' varieties in 1999. 'SOFT TOUCH,' commonly known as 'peach pine' for its nice, peach-like aroma, accounted for about 16% of pineapple production in Okinawa in 2015.

Papaya breeding at JIRCAS-TARF started in 1997 and two cultivars, 'ISHIGAKI SANGO' and 'ISHIGAKI WONDROUS,' have already been registered under the program. 'ISHIGAKI SANGO' (Photo 1) has a dwarf tree form and is heat-tolerant with excellent fruit quality. As the southern part of Japan is frequently hit by typhoons (tropical storms), commercial cultivation of papaya is performed mostly in greenhouses. These papayas therefore generally do not set fruits during summer season because of high temperature inside the greenhouse. 'ISHIGAKI SANGO' is heat-tolerant because of its parthenocarpic characteristic, and thus is not affected by male sterility at high temperature and can produce fruits year-round.

Passionfruit breeding at JIRCAS-TARF started in 2008, culminating in the filing of an application for variety registration for 'SUNNY SHINE' (Photo 2) in 2016. 'SUNNY SHINE' has lower acidity and less immature fruit drop, resulting in good coloring of the skin and suitability for fresh consumption. However, the cultural performance is quite different depending on soil condition. For this reason, suitable soil types and appropriate cultural management methods for growing 'SUNNY SHINE' are being examined.

Breeding of passionfruit at JIRCAS-TARF is ongoing particularly on improving heat tolerance, with the aim of achieving high fertility under high temperature conditions using not only intraspecific but also interspecific hybrids for year-round production. In addition to heat-tolerant fruit varieties, some interesting characteristics such as photoperiodic sensitivity (i.e., flower buds are initiated under short-day conditions without lighting), automatic pollination (i.e., pollination occurs without pollinators or hand pollination), and non-abscission (i.e., fruits do not drop after maturity) have been found among genetic resources in JIRCAS-TARF. Excellent quality passionfruit cultivars possessing these characteristics are being eyed for future development.

Tatsushi Ogata
Tropical Agriculture Research Front

Photo 1. Papaya cultivar 'ISHIGAKI SANGO'

Photo 2. Passionfruit cultivar 'SUNNY SHINE'

Development of High-yielding Biomass Crops Using a Wild Relative of Sugarcane

A growing world population demands for increased production of both food and energy, posing a major challenge in unstable environments where conventional crop yields are low. Sugarcane is being viewed as an important crop for producing food (sugar) and energy (bioethanol and electricity from bagasse) in such areas. *Erianthus*, a perennial grass (Poaceae), is a wild relative of sugarcane and grows between the tropics and the temperate regions. Biomass production is large because it is a C_4 plant with high photosynthetic ability. It is also tolerant to drought and infertile soil conditions because of its large and deep root system. Furthermore, post-harvest regeneration from stubble is outstanding and multiple ratoon cultivation is possible. In order to introduce these favorable characteristics of *Erianthus* into sugarcane and develop a new type of sugarcane, researches are being carried out in Northeast Thailand and at the Tropical Agricultural Research Front (TARF) in Ishigaki Island under the High-Yielding Biomass Crops Project of JIRCAS.

Collaborative research is ongoing in Northeast Thailand where sugarcane yield is low because of unstable environment while basic technologies are being developed at TARF using its experimental fields and facilities, which are suitable for sugarcane research. Thus far, we found that to cross sugarcane and *Erianthus*, their flowering periods should be synchronized. A technique that delays the flowering period of *Erianthus* by lighting treatment was developed. This technique, which was developed in Japan, was applied to Thai *Erianthus* lines with early flowering period, and they were successfully crossed with sugarcane.

In order to utilize *Erianthus* in itself as an energy crop, TARF together with the National Agriculture and Food Research Organization (NARO) bred "JES1," the first *Erianthus* variety in the world, and then "JSC1." These varieties can grow and overwinter across large areas, from Kyushu to Northern Kanto regions, and are also suitable for machine harvest. Commercial use of *Erianthus* was started in Sakura City in Tochigi Prefecture, where *Erianthus* was grown on an abandoned farmland, and biomass energy was stably supplied in the form of pellet fuel. TARF is the only organization to produce and supply *Erianthus* seeds in Japan (Photo).

In addition, TARF, with its highly suitable environmental condition for sugarcane breeding and cultivation, contributes to sugarcane breeding program in Japan by cooperating with other organizations on cross-breeding and seed production and by offering newly developed breeding materials and techniques. More than 500 sugarcane and wild relative germplasm accessions are conserved as crop resources at TARF, which also acts as the tropical and subtropical crop sub-bank of the Genebank Project by NARO. Since sugarcane should be kept in vegetative form and not by seed, more than 500 accessions are planted every year in the field at TARF.

Shotaro ANDO
Tropical Agricultural Research Front

Photo. *Erianthus* (JES1 variety) seed production field at TARF

Genetic Improvement of the Indica Group Rice Variety and its Applications

Ishigaki Island in Okinawa Prefecture is located in a subtropical area, thus providing the most suitable conditions for the cultivation of Indica Group rice in Japan. The rice cultivars in the main islands of Japan mature early and cannot keep enough vegetative growth in Ishigaki. These are also not high yielding, and are thus considered unsuitable for cultivation in Ishigaki. Many developing countries are located in tropical areas where Indica Group cultivars are often grown and used for breeding. The Tropical Agricultural Research Front (TARF), with its similar climatic and geographic conditions, is therefore in the best position for cultivating and breeding Indica Group rice in Japan. To solve the problems encountered by Indica Group rice in developing countries, we introduced, evaluated, and shared rice germplasm and breeding materials between collaborative countries, and we conducted genetic improvement of leading cultivars facing agricultural problems, with the aim of contributing toward stable rice cultivation in developing countries. At the same time, we tried to share the materials and genetic information not only with international collaborators but also with domestic agricultural scientists as delivery workers.

We are targeting blast disease, one of the most serious biotic stresses affecting rice, as well as abiotic stresses particularly salinity, P deficiency, and low-fertility soil. We are trying to identify efficient breeding materials and genes and introduce them into the genetic backgrounds of leading cultivars in developing countries to develop new breeding materials. Regarding biotic stress research, blast isolates from Asian and African countries were collected extensively, and the pathogenicity, geographical distribution, and differentiation of blast races were clarified. Using these information, a differential system that can be used to clarify the resistance in rice variety and pathogenicity of blast isolates was developed and distributed among collaborative counties. Variation analysis of germplasm and genetic improvement of cultivars were also conducted using the differential system and novel resistance genes. As for abiotic stress, collaborative research studies are being conducted with other scientists from international agricultural research institutes. We are carrying out a germplasm survey and identifying efficient tolerance gene(s), and introducing them into Indica Group cultivars. We are also examining the plant architecture, shoot types and traits such as culm length, number of tillers and size of panicle, and the root types as characterized by their distributions (from shallow to deep). Thus, breeding materials that have the desired physiological and morphological traits are being developed to improve the plant's adaptability against environmental challenges caused by climate change and contribute to achieving stable rice production in developing countries. Furthermore, there is an ongoing collaboration with a brewer of local distilled spirits (called "Awamori") in Ishigaki Island to test its performance and other possibilities for domestic use in Okinawa of the Indica Group breeding materials developed under the international collaborative research.

To conduct these research works, new paddy fields were constructed in 2017, and the existing greenhouse was renovated this year for growing young rice plants in nursery beds before transplanting. By improving the facilities and overcoming the challenges in breeding and genetic research works, we hope to make TARF become the research base for Indica Group rice development in Japan.

Yoshimichi Fukuta
Tropical Agricultural Research Front

Genetic improvement and development of Indica Group rice cultivars under subtropical conditions.
The Japonica Group cultivars in the main islands of Japan are not suitable for cultivation in the subtropical Ishigaki Island, but many Indica Group cultivars from tropical areas adapt well. Indica Group cultivars YTH183 (B) and IR 64 (C), both of which are grown in Ishigaki, show higher productivity compared with the Japonica Group cultivar, Hitomebore (D), which is cultivated widely in Tohoku Region in Japan. A tall rice plant (A) in which the long-culm gene had been introduced into the genetic background of YTH183 is being developed to demonstrate shoot type (plant architecture) breeding.

Introduction of Useful Traits into Rice by Transgenic Approach and Genome Editing

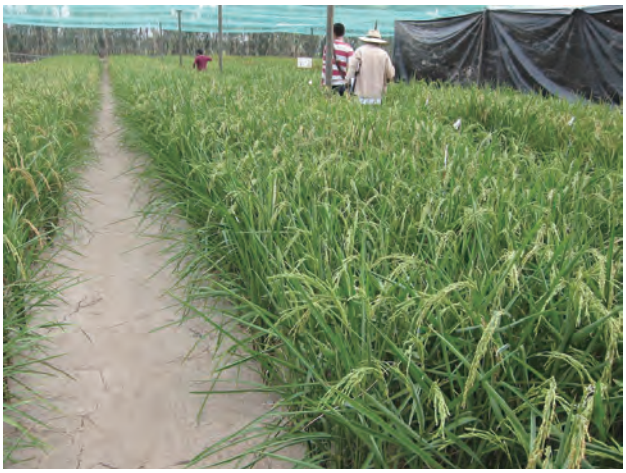
What is plant breeding? Plant breeding, I would say, is the introduction of useful traits into crops to benefit farmers and consumers. Typical useful traits include increased yield, ease of cultivation, good taste, and high nutritional value. Since ancient times, farmers select the best plants in a given field, grow them to get seeds, and then use the seeds to grow further generations. This is called "selective breeding," and it is the simplest form of plant breeding. At the beginning of the 20th century, plant breeders started cross-breeding, in which breeders cross plants possessing different useful traits by artificial pollination, and then select progenies that inherited the useful traits from the parents. Artificially induced mutation of genes has been also practically applied for breeding since the mid-20th century. By the end of the 20th century, products made from transgenic crops have been put on the market. More recently, a new technology for gene modification called genome editing appeared and has been attracting the attention of plant scientists and plant breeders as a novel tool for breeding. Here I will provide an overview of the transgenic and genome editing approaches, which are relatively new technologies for plant breeding, and I will also show you our activities related to these technologies.

The transgenic approach refers to a technology that introduces a gene isolated from an organism to a host organism. In cross breeding, breeders have to find a gene that confers a useful trait from crossable species, usually the same or very closely related species. On the other hand, in the transgenic approach, genes from any kind of species can be utilized for the improvement of a target crop. This is the biggest advantage of the transgenic approach over cross breeding. JIRCAS has been working on the development of transgenic rice with improved drought resistance, and we have recently demonstrated that transgenic upland rice varieties expressing a gene encoding galactinol synthase isolated from Arabidopsis had higher grain yields than original non-transgenic varieties under drought conditions in field environments.

Genome editing is a technology that introduces mutation into a targeted gene. Since conventional mutation breeding relies on random and unspecific mutation of genes, breeders have to select individuals with targeted useful traits from a large number of mutated plants. Genome editing can skip this laborious process if breeders could specify the gene to be mutated leading to useful traits. JIRCAS succeeded in establishing a system for genome editing that is applicable to major rice cultivars in Asia, Africa, and South America. We are currently working on generating genome-edited rice that can maintain grain yields under nutrient-deficient conditions.

The transgenic and genome editing technologies still have a long way to go in the agricultural field due to public acceptance issues. Nevertheless, the transgenic approach is the only way to introduce useful genes isolated from other organisms into a target crop, while genome editing is a tool that can improve the efficiency of mutation breeding tremendously. We will carry out these research activities while tackling the issues so we can apply the technologies in the hope of stabilizing rice production in developing countries.

Takuma Ishizaki
Tropical Agricultural Research Front



Confined field trial at the International Center for Tropical Agriculture, Colombia, to evaluate the performance of transgenic rice under drought conditions

Albino rice generated by genome editing. Mutation was induced in the gene required for plants to look green.

The Aquaculture Department of the Southeast Asian Fisheries Development Center（SEAFDEC/AQD）

The Southeast Asian Fisheries Development Center (SEAFDEC) is an autonomous inter-governmental body established in 1967, aiming to support the Member Countries through technical development of fisheries and aquaculture in Southeast Asia. SEAFDEC comprises 10 ASEAN Countries (Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Philippines, Singapore, Thailand, Vietnam) and Japan. The Center is supporting the development of fisheries not only in each ASEAN Member Country but also in Southeast Asia as a region, through the Secretariat in Bangkok and Technical Departments stationed in five countries. The range of their activities is very wide, including the development of modern fishery technologies and human resources (training), fisheries post-harvest and processing technologies, technical development of aquaculture, and management and development of marine/inland fisheries resources. Japan dispatches several staffs to SEAFDEC to serve as Deputy Secretary-General and Deputy Chief of the Training Department (from the Fisheries Agency), and Deputy Chiefs of three other Departments (from Japan Fisheries Research and Education Agency).

As mentioned above, SEAFDEC has a deep relationship with Japan, with the Aquaculture Department (AQD) in Iloilo, Panay Island in the Philippines having the closest connection with JIRCAS. In September 2000, SEAFDEC and JIRCAS signed a “Collaborative Fisheries Research” agreement, aimed at conducting “Studies on Integrated and Sustainable Aquaculture Procedures in Sub-Tropical and Tropical Countries,” and started the collaborative study titled “Systems for Sustainable Production of Aquatic Animals in the Brackish Mangrove Area.” From 2009 to 2011, SEAFDEC/AQD and JIRCAS implemented the Working Plan (WP) titled “Development of Sustainable Aquaculture Technology Suitable for Southeast Asia,” and during the 3rd Medium-Term Plan of JIRCAS (2011-2016), JIRCAS and SEAFDEC/AQD deepened their relationship by concluding the 5-year Memorandum of Agreement (MOA) for comprehensive collaborative research activities. Under the WP titled “Development of Integrated Multi-Trophic Aquaculture (IMTA) Techniques for Livelihood Improvement” (May 2011), studies were carried out to develop compatible technologies to mitigate the impacts of aquaculture on the environment and improve the livelihoods of small scale fisheries through milkfish-seaweed-sea cucumber polyculture.

A new MOA (July 2016) and two WPs have been signed under the current 4th Medium to Long-Term Plan of JIRCAS starting from 2016. In accordance with the WPs, we have established closer collaboration by conducting a collaborative study for the dissemination of IMTA technologies developed during the previous term. We are also developing a low-cost fish meal for aquaculture using alternative protein sources as rising costs of fish protein have become one of the most common yet important issue affecting aquaculture worldwide. These studies have been conducted by effectively utilizing SEAFDEC/AQD facilities such as the Igang Marine Station. The achievements obtained through our collaborative studies, including IMTA techniques and related basic sciences, have been published in scientific journals and actively disseminated on-site by holding workshops and through symposium papers, such as those presented at the 85th International Symposium held in Japan by the Japanese Society of Fisheries Science (September 2017).

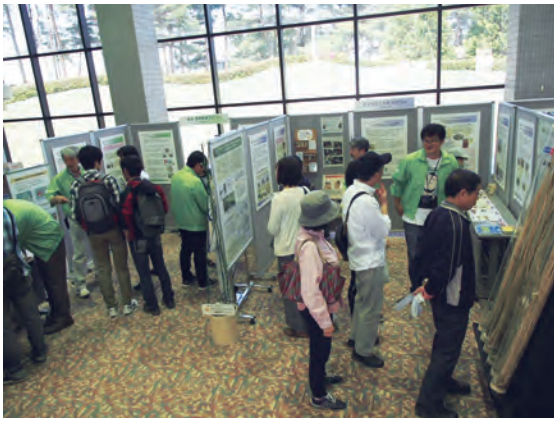
Osamu Abe
Director, Fisheries Division
JIRCAS

Igang Marine Station (SEAFDEC/AQD)

Harvesting milkfish at Igang Marine Station (SEAFDEC/AQD)

Open House 2018

As part of the Science and Technology Week celebrations in late April 2018, various research institutes in Tsukuba, including JIRCAS Headquarters, opened their doors to the public to showcase their work. JIRCAS held its Open House on April 20-21 (Fri-Sat), and its main activities were the following: poster presentation of research highlights, tropical fruit tasting, a tour of the shrimp culture facility, biomass materials and quinoa exhibit, traditional/international costume-fitting and picture-taking, distribution of hibiscus and pineapple seedlings, and goldfish scooping. Researchers also conducted mini-lectures and quiz games. NHK News covered the special event, and the buzz generated by Day 1 visitors was featured on TV. Overall, the event was a success, and JIRCAS looks forward to next year's Open House.



Poster presentation

Quinoa exhibit

Fruit tasting

Best Paper Award from the Japanese Society for Tropical Agriculture

Dr. Hidetoshi Asai, a senior researcher of the Crop, Livestock and Environment Division, was named winner of the Best Paper Award for his research article titled "Labour-Saving Practices for the External Expansion of Swidden Agriculture for Upland Rice Production in a Mountainous Area of Laos," which was published in Tropical Agriculture and Development (vol. 61, pp. 166-178 DOI: 10.11248/ jsta.61.166) by the Japanese Society for Tropical Agriculture (JSTA).

The paper was praised for revealing the advantages and disadvantages of labour-saving practices such as herbicide application and labour-outsourcing in a mountainous area of Laos. It explains that while these practices have been rapidly adopted by farmers of swidden agriculture (a.k.a. shifting cultivation or slash-and-burn farming) due to its economic rationality, its wide acceptance has also resulted in the outward expansion of field areas and consequent deforestation.

The award ceremony was held on March 10, 2018 during the JSTA's 123rd Meeting.

賞　状

Hidetoshi ASAI, Pheunphit SOISOUVANH,
Pheng SENGXUA, Kenichiro KIMURA,
Banthasack VONGPHUTHINE,
and Masuo ANDO 殿

貴論文 "Labour-Saving Practices for the External Expansion of Swidden Agriculture for Upland Rice Production in a Mountainous Area of Laos" は 平成29年に日本熱帯農業学会より刊行された学会誌に掲載され 熱帯農業の発展と情報発信への貢献が大なるものと認め 最も優秀な論文として選ばれました
よってここに表彰いたします

平成 30 年 3 月 10 日

日本熱帯農業学会
会長 縄田 栄治

Best Paper Award certificate

We changed our logo on April 1, 2018.

About the new JIRCAS logo

The new logo incorporates design elements from the original, retaining the Earth motif while enhancing the lettering for better visual recognition. The acronym is displayed in a deep and rich shade of blue (indigo), traditionally called “Japan Blue,” and the red circle above “I” represents an image of the sun (Hinomaru) illuminating our planet.

2018 Japan International Award for Young Agricultural Researchers and JIRCAS International Symposium 2018

The 2018 Japan International Award for Young Agricultural Researchers (Japan Award) commendation ceremony and the JIRCAS International Symposium 2018 will be held at the U Thant International Conference Hall, the United Nations University in Shibuya, Tokyo, Japan, on November 6, 2018 (Tue).

The 2018 Japan Award commendation ceremony will take place at 10am (registration opens at 9:30am) while the JIRCAS International Symposium 2018 will follow from 1pm onwards (registration opens at 12:30pm). This year’s theme is “Women in Fisheries: Sustainable Development Goals (SDGs) and Contributions to Research and Industry.”

There are no entrance fees to both events but online registration may be required. Please visit our website (https://www.jircas.go.jp) for more information.

JIRCAS Mail Magazine (English) Registration Guidance

JIRCAS Mail Magazine, the online quarterly publication of JIRCAS, provides information on the latest topics, events, seminars and workshops, as well as new technologies, research highlights, and guidance publications. To subscribe online, please use the following link. Thank you very much in advance.
https://www.jircas.go.jp/en/public_relations/jircas_mailmagazine

JIRCAS Newsletter
Japan International Research Center for Agricultural Sciences (JIRCAS)

September 2018 No.84
Information and Public Relations Office
1-1 Ohwashi, Tsukuba, Ibaraki 305-8686, JAPAN
Phone: +81-29-838-6313 Fax: +81-29-838-6316 https://www.jircas.go.jp/

https://www.jircas.go.jp