

Newsletter

FOR INTERNATIONAL COLLABORATION

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Harvesting paddy in Indonesia (Photo by M.Oka)

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JIRCAS

JAPAN INTERNATIONAL RESEARCH CENTER FOR AGRICULTURAL SCIENCES

Japan International Research Center for Agricultural Sciences

A New Challenge

Director General, Dr. Keiji Kainuma

Since October 1, 1993, the Tropical Agriculture Research Center has ceased to exist in its present form and has been reorganized into a new Center.

For the past 23 years since its establishment in 1970, the Tropical Agriculture Research Center has played a major role in the development of agriculture and forestry in the tropics and subtropics. The achievements stemming from collaborative research carried out with a large number of research institutes in various countries have generally been highly evaluated. I would like to take this opportunity to express my deep gratitude both to the Japanese and counterpart organizations overseas for the support and assistance extended to the members of the Tropical Agriculture Research Center.

The reorganization of the Tropical Agriculture Research Center into a new Center is an important aspect of Japan's contribution to the welfare of the international community through the promotion of research for the development of technology in the field of agriculture to respond to the changes in the world situation.

The research activities of the new Center will encompass all the fields of agriculture, including fisheries for the first time, while forestry will be further promoted. This expansion of the research fields, needless to say could not have been achieved without the strong support of all the institutes affiliated to the Ministry of Agriculture, Forestry and Fisheries (MAFF) of Japan.

In addition, the research activities of the new Center will not be limited to collaboration with the developing countries in the tropics and subtropics but will cover wider geographic zones such as cool areas and the temperate zone to deal with the problems faced by the countries located in the Andean highlands of South America, and in Central Asia, as well as Mongolia, the north-western part of China, etc.

As a result of the expansion of the research fields and areas targetted for research, the concept of research will be substantially modified along the following lines.

1 "Focal" approach to research versus "Comprehensive" approach

The Tropical Agriculture Research Center had so far tended to consider the problems related to agriculture on the basis of individual disciplines or by combining related fields of research. However to address problems on a global scale, including sustainable production of food, environmental issues, in particular drought, the process of desertification of arable land or grasslands due to overgrazing, the destruction of tropical forests, etc., it is important to promote collaborative research and exchange data through the systematization of technology by organizing multi- and inter-disciplinary teams dealing with a large number of different fields, overlapping the research divisions of the Center. For example, studies on the progression of desertification due to overgrazing may require the participation of a soil scientist, geologist, grassland botanist, weed expert as well as remote sensing specialist.

For the expansion of the research fields, the planning of the projects will obviously be modified. At the beginning, socio-economic studies will be carried out to identify the research priorities of the counterpart countries. In addition, for the systematization of the technology to be transferred, all the research components will be closely linked.

Born in Shizuoka Pref., Japan in 1936. Received B. Agr. in 1959 and Dr. Agr. in 1968 from Dept. of Agricultural Biochemistry, Tohoku University. Joined MAFF in 1959 at Starch Research Unit, National Food Research Institute and carried out extensive research on starch structure and utilization, novel starch-related enzymes and food biotechnology, as a Research Biochemist, Head of Carbohydrate Lab. (1973-83) and Director of Food Engineering Div. (1983-87). He



was a Post-Doctoral Research Associate (1968-70) and Visiting Associate Prof. (1977-78) at Dept. Biochemistry, Iowa State University, where he closely collaborated with late Prof. Dexter French.

He was appointed as National Program Staff (1987-88), Director of Biotechnology Div. (1988-90), Deputy Director General (1990-91) and Director General (1991-93) of Agriculture, Forestry and Fisheries Research Council Secretariat of MAFF, then appointed as Director General of TARC in July, 1993.

He is the author of over 300 research papers and review articles in the above-mentioned research areas, and received several awards including the Award of Minister of Science and Technology (1982), Dexter French Memorial Lectureship of Iowa State Univ. (1984) and Nikuni Award of Japanese Society of Starch Sciences (1992), for his outstanding contributions to new developments in starch sciences and starch industries.

matization of the technology to be transferred, all the research components will be closely linked.

2 Development of a research structure at the Center in Japan

To support the research activities carried out overseas, it is essential to improve the structure of research at the Center in Japan. For example a system will be set up to enable the researchers to carry out basic advanced studies related to biotechnological fields or to construct models to simulate the process of desertification, etc.

3 Development of information systems

It is important to develop information systems in order to carry out research collaboration with the respective countries more effectively by compiling and analyzing data relating to agriculture, forestry and fisheries in the developing regions. Through the harmonization of information obtained from socio-economic studies with data stemming from research in fields related to natural sciences, it should become possible to carry out research that would be more comprehensive and cover a wider range of disciplines.

4 Promotion of closer collaboration with various research organizations

For the effective implementation of research, it is essential to promote a close collaboration at various levels, including national organizations of the respective counterpart countries, international centers affiliated to the CGIAR, research organizations from developed countries, and in Japan, the administration au-

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Message for Celebrating the Establishment of Japan International Research Center for Agricultural Sciences

Mr. Sakuei Matsumoto

The reorganization of the Tropical Agriculture Research Center into a new Center is a major step for the advancement of research in the field of agriculture, forestry and fisheries at the international level. On this occasion, I would like to extend my best wishes to the new Center, hoping that through its activities, the Center will be able to assume such a heavy responsibility.

The establishment of the new Center was motivated by the awareness on the part of the authorities of the Ministry of Agriculture, Forestry and Fisheries of Japan (MAFF) of the need to promote internationalization in the field of agriculture, forestry and fisheries, in other words, the urgency of this problem was clearly recognized. Along with the progression in the negotiations for the conclusion of the Uruguay Round, it is becoming necessary to identify the position and role of national agricultural policies within the international context more than ever. I believe that the internationalization of the agricultural, forestry and fisheries sectors should not be limited to the liberalization of the market for agricultural, forestry and fisheries products, but should involve the formulation of a policy, in taking account of the present situation and future prospects for the development of agriculture, forestry and fisheries at the international level.

To understand the present and future trends of agriculture, forestry and fisheries worldwide, it is important to collect and analyse concrete information about these sectors overseas as a whole or at the regional level. Since MAFF had not developed such an integrated system of research previously, the establishment of the new Center will enable to carry out on a full scale comprehensive studies in the field of socio-economics and natural sciences pertaining to all aspects of agriculture, forestry and fisheries.

The research areas covered by the new Center involve important issues, including the situation of the food supply and demand in the world, the role played by agriculture, forestry and fisheries activities in relation to the preservation of the global environment, the harmonious development of the rural communities, etc. In taking account of these issues, the MAFF authorities are currently implementing a national policy for guaranteeing a stable supply of food products, for securing the preservation of agricultural, forestry and fisheries resources and for revitalizing the rural communities, which should enable to define the position of Japan in the international community. At the same time, Japan's international cooperation activities and contribution in the field of agriculture, forestry and fisheries in the developing regions as well as in the tropics and subtropics should be further adapted to the requirements of the respective regions by adopting a comprehensive approach.

In particular, due to the rapid increase of the population and the decrease in agricultural production, the food situation is becoming critical and the environmental conditions are de-

Chairman, Agriculture, Forestry and Fisheries Research Council, MAFF (since 1991) and Former President of Agriculture, Forestry and Fisheries Finance Corporation (1984-92). Born in 1924. Graduated from Tokyo University. Joined MAFF in 1950. Former Vice-Minister of MAFF (1981-83).



teriorating on a global scale. The promotion of sustainable development of agriculture, forestry and fisheries worldwide to address these problems is an urgent task for mankind. Therefore, it is essential that both developed and developing countries collaborate with each other in these fields. Japan is providing assistance and is engaged in technical collaboration through government funds and through the Japan International Cooperation Agency (JICA). To further enhance the efficiency of assistance, it becomes increasingly important to further promote research cooperation for providing assistance in the field of technology.

Since the new Center is a base for the collection and systematic analysis of information relating to these important themes, research cooperation with various countries in the developing regions as well as in the tropics and subtropics could be implemented comprehensively. Therefore, it is important to link the research activities carried out in the research institutes of the counterpart countries overseas with those conducted in Japan at the new Center or in the other research institutes affiliated to MAFF. It is also necessary to promote closer collaboration with other research organizations such as JICA.

Since the Center will carry out systematic research projects covering a large number of fields, the research themes will become even more comprehensive and commensurate with the status of a Center involved in research at the international level.

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thorities and related institutes of the Ministry of Agriculture, Forestry and Fisheries and other research organizations as well as the Japan International Cooperation Agency (JICA).

5 Implementation of Visiting Research Fellowship Program and further promotion of training programs

The implementation of the Visiting Research Fellowship Program at the Okinawa Sub-tropical Station of the Center and other training activities reflects the importance of developing

human capability within the framework of the contribution of Japan to the welfare of the international community.

In conclusion, as the first Director General of the new Center, I would like to emphasize that through the implementation of research activities related to agriculture, forestry and fisheries, the Center is fully committed to contributing to sustainable food production compatible with the preservation of the environment on a global scale so as to upgrade the living conditions of the people in the world.

Message for Celebrating the Establishment of Japan International Research Center for Agricultural Sciences

Mr. Kunio Takemasa

I would like to take this opportunity to congratulate the Japan International Research Center for Agricultural Sciences (JIRCAS) on the occasion of its establishment and outline the responsibilities that, I believe, the new Center should fulfill.

The establishment of JIRCAS stems from the need to expand the activities of the Tropical Agriculture Research Center (TARC) in order to meet the demand for more diversified and enhanced research collaboration to deal with problems on a global scale including environmental problems which should be urgently addressed. Although the new Center will take over a large part of the research activities of TARC, it is expected to play a new role and assume new functions.

The history of the establishment of TARC, the predecessor of the new Center, is described in the document: "Twenty year history of Agriculture, Forestry and Fisheries Research Council" as follows; "On June 10, 1970, after a long preliminary period, TARC was established with a specific mandate to carry out research for the development of technologies pertaining to agriculture, forestry and animal husbandry in the tropical and subtropical regions." The "long preliminary period" refers to the discussions initiated in 1965 at the time when Dr. T. Ogura was Chairman of the Research Council. Thereafter, there was much hesitation regarding the status of the Center including the concept of a corporation with a special status, the creation of a temporary office, in addition to the deliberations at the Diet, etc.

In spite of the difficulties at the onset, the research structure of TARC improved by the successive establishment of the Second Research Division, Research Information Division, Eco-Physiology Research Division, Marginal Land Research Division and International Collaboration Section at the Okinawa Branch. In addition, within the framework of the collaborative activities, TARC currently dispatches about 40 researchers on long-term assignments and about 90 researchers on short-term assignments annually. The research projects cover problems relating to environmental resources, basic sciences, the global environment, etc., in addition to invitations of foreign researchers to Japan. Through the improvement of the structure of research and research activities, I believe that TARC has acquired a certain reputation in the countries located in Southeast Asia mainly and in other areas as well as among the international agricultural research organizations.

The new Center has been established to cover a new field, fisheries and to respond to the strong demand for research collaboration not only from countries located in the tropics and subtropics, but also from countries in Central Asia, the Andean highlands of South America, etc. In this regard, I expect that the Center will achieve the following objectives.

First, the new Center should identify and coordinate precisely the research needs in the field of fisheries and in the developing regions other than the tropics and subtropics, and then define the priority of research programs targeted for collaboration. For carrying out research collaboration, a great amount of resources is invested for the continuous dispatching of researchers, etc. Therefore, it is important to devote sufficient energy to understand the research needs and formulate the research programs when the effort required for the implementation of the research programs and the analysis of subsequent results is taken into account. These considerations apply not only to the new fields and regions which the Center will cover but also to those in which TARC was previously involved.

*Director General, Agriculture,
Forestry and Fisheries Research
Council Secretariat MAFF
(since July, 1993).*

*Born in 1939. Graduated from
Tokyo University of Education.
Joined MAFF in 1961.*



Second, the new Center should rapidly report the research outcome to the respective countries concerned. This activity could be more effective when combined with the precise identification of research needs. Reports on the results obtained should also correspond to the research needs identified. In this regard, international symposia, workshops, etc. could be held in the area where research has been carried out to promote the participation of local researchers and administrators.

Third, for the implementation of research and to obtain results, it is essential to train and recruit competent staff. To achieve this objective, it is necessary that the Ministry of Agriculture, Forestry and Fisheries as a whole deals with the development of human resources.

Furthermore, for the effective implementation of research, it is necessary to further promote joint research through the invitation of foreign researchers. In addition, foreign researchers should be involved in the management and evaluation of the research activities. Efforts should be made to address these difficult problems.

I would like to emphasize that the new Center was established through the dedication of a large number of persons. In particular, I would like to acknowledge the enthusiasm of Mr. S. Matsumoto, Chairman of the Agriculture, Forestry and Fisheries Research Council, and the efforts of Dr. K. Kainuma, Director General of JIRCAS.

The Center which bears a heavy responsibility amidst great expectations can be assured of the full support of the Agriculture, Forestry and Fisheries Research Council Secretariat. I am deeply convinced that JIRCAS will channel information to and from various parts of the world through the enhancement of the level of research, as well as the construction of databases and systematization of information. The new Center will also be the core, both in Japan and overseas, of research relating to agriculture, forestry and fisheries aimed at the developing regions.



Message from Mr. V. Rajagopalan, Chairman, CGIAR

Mr. Visvanathan Rajagopalan

On behalf of the Consultative Group on International Agricultural Research (CGIAR), I offer congratulations and good wishes to Dr. Keiji Kainuma, who has assumed leadership of the Tropical Agricultural Research Center (TARC) as it prepares to widen its research objectives, strengthen its linkages with compatible organizations and, overall, to participate even more effectively than before in the globalization of agricultural research. The new Director General is well suited to face the challenges that lie ahead.

TARC's original emphasis was on productivity but it has turned increasingly to environmental research, including work on marginal lands. In carrying out these programs, TARC has built strong partnerships with developing country institutions and with the CGIAR. Several TARC scientists have been posted outside Japan on research assignments, many of them at CGIAR centers. Thus, TARC already has established a strong niche for itself in the global agricultural research system and has the capacity to build on its long standing tradition of international collaboration.

In its philosophy, in the substance of its research portfolio, and in its commitment to building lasting partnerships in developing countries, TARC and the CGIAR share common interests and characteristics. Like TARC, the original focus of the CGIAR was almost exclusively on productivity. The results of these efforts are firmly established. Particularly well known are the successes of IRRI and CIMMYT in producing the short strawed rice and wheats, the foundation of the green revolution. Today, the CGIAR is convinced that success in germplasm development alone is not enough.

That focus must be strongly supplemented by research to improve the management of soil and water and the landscape in general. The CGIAR therefore seeks to maintain a balance between productivity and the management of natural resources. In doing so, the CGIAR recognizes that human decisions precipitate resource and environmental degradation. Effective research programs must understand the impact of human decision making – on the farm, in the community and in local and national institutions – and use this understanding to provide information for decisions which reconcile productivity improvement and sustained management of natural resources.

We must increasingly promote the idea that sustainable agriculture is the key that will enable many millions of people in developing countries to escape from the poverty which inhibits the careful husbanding of land, water and forestry resources. If farmers and their families are so poor that finding tomorrow's food overrides their desire to maintain the land for themselves as well as for future generations, this poverty must be the target for our research. In this connection, I was heartened, on reading a recent TARC newsletter, by the sensitivity shown to the fact that local circumstances often dictate the kinds of research products farmers, and especially small farmers, need. We must be prepared to shape our efforts even at the international level to identify farmer needs.

These complex issues go beyond the classic technical disciplines of agricultural research. The range of skills required demands wide collaboration among research institutes with complementary capabilities. The CGIAR finds it particularly helpful, therefore, that as TARC prepares for a phase of consolidation and innovation, it intends to emphasize the promotion of international cooperation; an area in which it has already established a strong reputation. This approach is particularly appropriate to dealing with natural resource management because the human environment is global and its problems can be resolved only by a global response.

Vice-President of the World Bank and Chairman of the Consultative Group on International Agricultural Research (CGIAR).

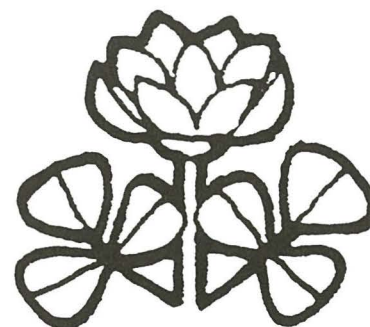
Received a Civil Engineering degree from Madras University in 1949, a post graduate degree in Sanitary Engineering from Johns Hopkins University, USA, in 1954 and an honorary Doctorate in Engineering from Anna University (formerly Madras University) in 1993. When he first joined the World Bank in 1965, his work focused on the preparation, appraisal



and supervision of projects in many countries. Since the mid-'70s, he has held several senior managerial positions, including, Director of the Projects Policy Department from 1979 to 1985, Director of Europe, Middle East and North Africa Projects Department from 1985, and as Vice-President, Sector Policy and Research from 1987, which subsequently was reorganized as Sector and Operations Policy in 1990, until he was appointed to his current position as Vice-President and Special Advisor on Jan. 1, 1993.

Tropical deforestation, desertification, research on fisheries and the erosion of genetic resources have been highlighted as potential areas of emphasis in TARC's next phase of operations. These program areas are closely congruent with the major fields of research recently accepted by the CGIAR as critical for the future of agriculture and for the resolution of wider environmental issues.

The world can overcome the deepening problems of the environment only with a sustained collaborative effort in which each partner contributes its particular strengths to a common strategy for solution. This reality provides a restrengthened and reoriented TARC with new opportunities and challenges. The new TARC can restructure existing research partnerships on the basis of competence, complementarity, and division of labor. In doing so, TARC can serve as a catalyst to bring the full spectrum of Japan's potential in agricultural science and technology to bear on the resolution of important global issues. I am confident that in this process, TARC and the CGIAR will continue to work as effectively in the future as we have done in the past.



A New Chapter in International Collaboration for Sustainable Agriculture

Dr. Klaus Lampe

In many parts of the world, including both the industrialized and the predominantly agrarian-structured agricultural economies, concerns for food have been neglected over the last decade. For many good reasons, attention was given to environmental concerns and equity, gender, and urbanization problems.

Under these circumstances, it is most encouraging to see that Japan, as the leading industrial power in Asia, recognizes the role of rural areas as the basis for economic development through a new research effort. Never was the need for inter-linked research activities related to agriculture, forestry and fisheries more urgent than it is today. Never before, in the history of humanity, were the links and interdependence of food production and environmental protection more obvious than they are today. And never before have researchers dealing with these problems had to work under such a time pressure.

Some people may ask why Japan does not concentrate on industrial research, and leave agriculture and forestry to others. Because preparing our globe for sustainable, environment-friendly food production should be the first and foremost investment for political, social, and environmental peace – that is why. From a study of the objectives of the reorganized TARC, it seems apparent that the many significant research contributions planned will contribute greatly to that goal.

Recent projections indicate that the world will need 765 million tons of rice per year in 2025; that is about 70% more rice than is consumed today. This is going to be a difficult goal to achieve, for many of the sources of past growth will not be available for tomorrow's farmers:

- Rice area is declining as prime ricelands are used for housing, industrialization, and infrastructure development.
- Salinization and degradation of irrigation systems are reducing both the area and quality of irrigated land.
- More than 70% of the rice area is planted to modern, high-yielding varieties, yet yields under the most favorable growing conditions have been stagnating. More fertilizer is needed just to harvest the same amount of rice on a given piece of land.
- Eroded soils and clearing of tropical forests by subsistence farmers in the uplands are progressing at a rapid pace.

All of this means that production increases in the future – the extra 315 million tons of rice needed by 2025 – must be achieved on less land, with less labor and less water, while at the same time reducing the consumption of chemical inputs in order to maintain the natural resource base.

It can only be seen as a wise decision on the part of the new TARC to contribute with the most modern tools of science and technology to the development of permanent production systems based on agriculture, forestry, and fisheries. The population pressure specifically in Asia, the growing poverty in rural areas, fast moving urbanization, and the loss of non-renewable natural resources are well known not only to policy makers but to a growing number of the general public as well.

To meet the challenges raised by these pressures on rice farming, IRRI has planned a set of projects for the different ecosystems in Asia. Included are Mega Projects, which have enormous scope and even more enormous potential to directly impact on the rate and magnitude of the desperately needed increase in Asian food supply, while at the same time ensuring the permanency of rice-based production systems. These projects include research to:

- Raise the current plateau of yields in the irrigated rice ecosystem.

Director General, International Rice Research Institute (IRRI).

Certified Farm Laborer Examination in 1952.

Studies in Agriculture and Economics, University of Hohenheim and Bonn (1952-55).

Diploma in Agriculture (M.S.) in 1956.

University of Bonn and Federal Research Centre for Agriculture, Braunschweig.

Research on the Mechanization of Potato Harvesting (1956-59).

Ph. D. in Agriculture in 1959.

German Agriculture Society

(DLG), Farm Machinery and Testing Division (1959-1962).

Government Advisor, Ministry of Planning and Head of Afghan-

German Agriculture Regional Development Program in

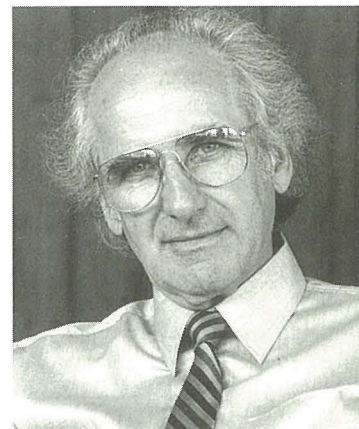
Afghanistan (1963-1969).

Head of Agriculture Section, German Technical Assistance Agency and

Ministry of Economic Cooperation (BFE and BMZ) (1969-1974).

Head, Department of Agriculture, Forestry, Fisheries and Health,

German Agency for Technical Cooperation (GTZ) (1974-1988).



- Reverse the trend of declining productivity in intensive irrigated rice.
- Improve the collection and conservation of rice genetic resources for future generations.
- Exploit rice biodiversity for sustainable pest management.
- Improve rice-wheat cropping systems.

Also included are New Frontier Projects, which explore exciting opportunities for scientific breakthroughs. These are:

- Exploiting apomixis, a natural method of asexual seed production that would enable resource-poor farmers to save the high cost of purchasing hybrid seed for each crop and yet still have the benefit of hybrid vigor.
- Assessing opportunities for symbiotic nitrogen fixation in rice.
- Managing weeds using less chemicals through allelopathy and biological control.
- Developing a perennial rice plant to achieve a sustainable cropping system for the uplands.

IRRI cannot do this job alone. It must collaborate with national agricultural research systems, especially those as experienced as TARC. That is why the reorganized Center's expanded mandate is so important.

IRRI's more than three decades of cooperation with the Japanese scientific community has been encouraging and also most successful. We are confident that this tradition will serve as a solid foundation for a new even more fruitful relationship with the new international center. We at IRRI, and all our colleagues working in research related to the disadvantaged rural areas, specifically in the developing world, can only feel further encouraged by the move of the Government of Japan which, with its new TARC initiative, demonstrates such unique farsightedness and leadership.

Steps Towards New Horizon

Nearly a quarter of century has passed since the establishment of TARC in 1970, and such a lapse of time is obviously required for any organization involved in international cooperation to acquire scientific relevance in its activities and to obtain significant results. It is fair to say that TARC has gained an international reputation due to its contribution to technology development in the tropics and subtropics through collaborative research conducted with national or international partners. Indeed, these achievements are the most valuable outcome of the strenuous efforts made by the scientists and supporting staff members of TARC.

The period during which TARC accumulated experience and achievements in accordance with its original objective also coincides with the time when many critical issues were brought to the full attention of the world community. Developing countries in particular are confronted with serious problems such as rapid population increase, unplanned urbanization, decrease and degradation of arable land and forest land, gradual erosion or even extinction of natural resources, stagnation of per capita food production, and so forth. These problems have generated three important concepts that had received only a limited attention in the past. First, problems in production systems differ widely depending on the location, and a so-called ecoregional approach – an approach on the basis of agro-ecological zones regionally defined – must be adopted. Second, production systems should be conceived not solely as a flow of commodities or management practices but as a dynamic complex involving physical, chemical, biological and socio-economic components. Third, each production system needs to be developed toward overall sustainable increase of production while striking a balance between the need for productivity increase and resource conservation.

Naturally, I would like to echo those who believe that the scheduled expansion of TARC is very timely and relevant, as the intended new mandate is appropriate to address the above-mentioned worldwide issues. In addition, I would like to emphasize the following four aspects with a view to further supporting the new Center's initiatives.

1 Global scientific imperatives: One ultimate goal of the new Center will be to contribute to sustainable increase in the productivity of agriculture, forestry and fisheries of developing countries. The two interrelated elements of this objective – productivity increase and sustainability – are key targets, for all the parties concerned. Still, no clear scientific methods have yet been developed to make breakthroughs for productivity increase and to evaluate and promote sustainability. Sustainable increase in productivity is far more difficult to attain unless the problems of the two connected elements are solved. Both CGIAR for the developing countries and OECD for the developed countries have thoroughly discussed these issues and published relevant documents, based on a common understanding to address them as global research imperatives. It is considered that the new Center will conduct its research programs also along this concept of utmost global importance.

2 Discipline-based activities: Two directions are likely to be adopted in the intended mandate – expansion of the research fields including forestry and fishery science and of the geographical zones by the addition of the temperate and cool zones. Furthermore, research needs in the current and future areas will be even more variable to reflect the diversity of the socio-economic development of the collaborating countries. Consequently, there is a need for the new Center to upgrade its knowledge and technical level and to deepen its scientific capabilities to solve problems from more basic and intrinsic angles. In

Dr. Ken-Ichi Hayashi

Member of Technical Advisory Committee (TAC), CGIAR. Graduated from Dept. of Agriculture, Tokyo University in 1953. Joined MAFF at Hokuriku Agr. Exp. Sta. and National Inst. of Agricultural Sciences and carried out research on rice, wheat and barley breeding, plant genetic resources and crop physiology (1954-77). Visiting Scientist at Rothamsted Exp. Sta., UK(1962-1963). FAO Regional Rice Improvement Officer and Executive Secretary of International Rice Commission at Bangkok (1970-73). Research Coordinator at the Agriculture, Forestry and Fisheries Research Council, MAFF (1977-79). Joined TARC and became successively Director of two Divisions and Director General (1976-86), then became Director General of National Inst. of Agrobiological Resources (1986-1989).



this connection, discipline-based organizational structure of the new Center appears most appropriate for continuously accumulating research capabilities while promoting the training of junior scientists. What is most important is to develop effective mechanisms and ways to implement a large number of programs and projects under a multidisciplinary collaboration, while trying to maintain or even enhance the scientific excellence of individual disciplines. Probably, a matrix approach could be a part of the solution.

3 Interlinked partnership: Previous history and experience of TARC clearly indicate that partnership has been an essential factor in promoting TARC's activities. The same will be true for the new Center. The partnership involves two dimensions. One includes all possible parties to collaborate with or to support the new Center, ranging from the domestic branch and sister institutions, agencies and universities to the foreign national or international research systems including the CGIAR Centers. Another involves more qualitative flows of materials, experiences, technologies, information, etc. Most importantly, the two dimensions need to be interlinked through unique human relations based on mutual trust, respect and enthusiasm, all of which originate from intensive cooperation.

4 Emerging research initiatives: Any attempt, regardless of nature and scale, needs a core force that drives the whole system forward. This is particularly important for a research organization like the new Center, since research is carried out by scientists only. However, scientists can not always become the driving force unless they are motivated and convinced that their full capacity will be generated by their own initiatives. The overall framework of activities needs to be constructed through organizational procedures to maximize the research initiatives of the scientists. They need to display flexibility in conducting research, while making utmost efforts to create something useful, for themselves, for the Center, for the partner, and for the international community.

Finally, I am most grateful to everybody for giving me the opportunity to write this note and I extend my best wishes for the prosperous future of the new Center.

Message from Thailand

Dr. Montri Rumakom

1 Introduction

We consider it as a great honour to be invited to contribute our views on the direction of agricultural research for publication in the first issue of the JIRCAS Newsletter.

First of all, we want to extend our congratulations to the TARC on receiving the approval from the Japanese Government for expansion and for carrying out a wider range of research activities in agriculture, fisheries and environmental problems by the new unit under the name of Japan International Research Center for Agricultural Sciences (JIRCAS), beginning on October 1st, 1993.

JIRCAS was established on the same date, October 1st, as the Department of Agriculture of Thailand but only with a difference of 21 years.

We would like to take this opportunity to express our sincere wishes for the success of JIRCAS and its fruitful future with the hope that JIRCAS will be able to promote the development of agricultural activities in various countries and increase food production for the population of the world. The Department of Agriculture, Thailand herewith expresses its willingness for closer cooperation.

2 Research Directions for Development of Agriculture

In the past, researchers aimed to increase only crop production without consideration of the effects in the long run like the use of chemical fertilizers, the application of pesticides, development of crop varieties through genetic engineering. Since environmental problems have been overlooked for a long time, therefore, today researchers have to work hard to solve problems of soil deterioration, poisonous residues of chemicals and unsafe transgenic plants.

Nowadays, research must emphasize the effects of the use of various inputs in the long run.

We have to recognize that the markets of agricultural commodities belong to the consumers rather than to producers. This is obvious judging from part of the population who asks to consume agricultural commodities without poisonous substances by using natural systems of agriculture instead.

At present, the directions of agriculture should aim mainly at sustainable agriculture in order to decrease the use of poisonous chemicals which are considered to be harmful to human beings and the environment, further development of crop varieties that are resistant to pests and diseases through the adoption of the principle of integrated farming to help the farmers increase their income and decrease the risk, and improve the environment to recover the original condition, or, in other words, to be most careful with the balance of nature.

3 Conclusion

Again, the Department of Agriculture would like to express its best wishes to JIRCAS on the occasion of the establishment of the new organization of Japan to assume the responsibility for improving and enhancing agricultural research beneficial to various countries in all parts of the world.

The Department of Agriculture expects that the work of JIRCAS in future will contribute to the increase of food production worldwide while improving the quality.

The Department of Agriculture hopes to work as closely with JIRCAS as with TARC with which the relationship lasted for 20 years.

(Director General, Department of Agriculture (DOA), Thailand)



Message from Malaysia: Key Research Areas in the Wet Tropics

Dr. Embi bin Yusoff

Significant progress in agricultural research has been achieved in the wet tropical regions since the 70's. As we made progress and breakthroughs into new technological discoveries, new threats were uncovered that could threaten the stability of agriculture in the future, especially in fields related to food production. Pests and disease build up, environmental degradation, nutrient depletion, the lack of genetic diversity and increased post-harvest losses are some of the factors that could affect food production drastically.

Research areas that can be considered crucial to sustain future agriculture in the tropical regions can be briefly listed as follows:

- Genetic diversity – Post-green revolution that took place in the 60's and early 70's tends to limit the genetic diversity of important food crops such as rice, wheat and corn. Efforts were made of late to restore this quality but at the same time maintain high output.
- Environmental degradation – Vast tracks of once fertile agricultural land are being depleted of the top soil due to intensive cultivation. Erosion and pollution hazards further damage this once fertile land. Measures to restore soil fertility and arrest further deterioration require urgent attention.
- Management of marginal soils – In the near future, lands which are inherently less suitable for agricultural activities will have to be brought to production due to severe competition for land use. Techniques to improve and manage these soils are urgently needed.

- Biological control practices – The increasing demand by consumers and public at large for reduced use of chemical pesticides warrants the application of biological control practices for important crop pests and pathogens. These techniques have to be effective and easily practised at reasonable cost.
- Resource management – The preservation and management of natural resources namely land, water and atmosphere to sustain productive agriculture and forestry will be crucial in densely populated areas of the tropics. Soil degradation, pollution of water bodies and atmosphere due to mismanagement and over-exploitation of these natural resources require an urgent research agenda to arrest the destructive trend.
- Product management and utilization – Currently, due to inadequate technology and facilities, post-harvest losses of farm produce remain high in most tropical areas. Efforts to minimize this trend are needed to suit specific economic setting. This important task ought to be complemented by further product development and utilization so that raw material utilization can be enhanced which will improve the socio-economic well-being of rural households.

In summary, the important research areas in the tropics to improve agriculture further center around the management of genetic diversity, management of the natural resources, improvement of the agro-ecological environment complemented by better end product utilization.

(Deputy Director General (Research), Malaysian Agricultural Research and Development Institute (MARDI), Malaysia)



Congratulation Letter on the Establishment of Japan International Research Center for Agricultural Sciences

Dr. Fei Kaiwei

I am very pleased to learn that the Tropical Agriculture Research Center (TARC) will officially be renamed as Japan International Research Center for Agricultural Sciences on Oct. 1st, this year. I know that it is not a simple change of name, but a reorganization, an expansion and an improvement of TARC in terms of its overall research objectives, orientation and fields, internal structure and management based on its experience in development issues in order to meet new requirements for Japanese and international agricultural development. Research activities of the new Center will expand from the past tropical and sub-tropical zones to temperate and cool-temperate zones; from the past agricultural dominant subjects to integrated research on a multi-disciplinary basis overlapping various sectors, including agriculture, animal husbandry, fisheries and forestry. The research capability will be also strengthened and the personnel increased in the new Center.

Therefore, on behalf of the Dept. of International Cooperation and Dept. of Science and Technology of the Ministry of Agriculture, P.R.C., I would like to extend my warm congratulations to you on the establishment of Japan International Research Center for Agricultural Sciences. At the same time, I hope that the Center will make new contributions to the development of agriculture, forestry and fisheries in Japan and in the whole world, particularly in the developing countries.

China and Japan are friendly neighbouring countries. There are many similar aspects in the natural resources. Both countries have common characteristics, such as a large population and limited farmland area per capita, practice of intensive farming for a long time, cropping systems with rice as the major crop, combination of agriculture with animal husbandry and with forestry. All these conditions provide a common base for co-operation on both sides. In the past decade, the exchanges and co-operation in agricultural science and technology between our two countries increased continuously, the instruments of co-operation were renewed constantly, the contents for co-operation became wider and deeper and very good achievements were made.

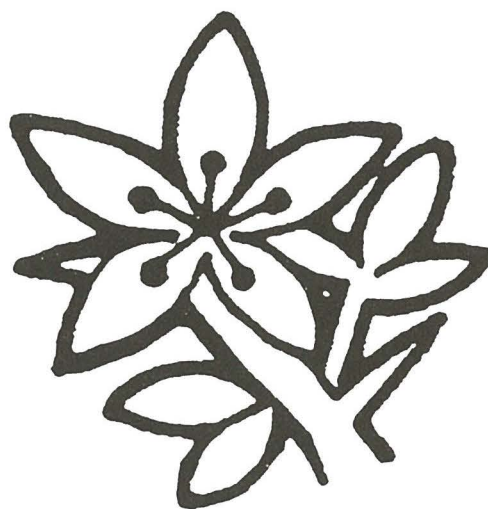
While reviewing the science and technology exchanges and co-operation in agriculture between our two countries, we will never forget TARC, the predecessor of Japan International Research Center for Agricultural Sciences which has played an active part and an important role. TARC has co-operated with Yunnan Academy of Agricultural Sciences to carry out a joint rice research project on Breeding for New Rice Varieties with Cold Tolerance, Disease-Resistance, High Quality and High-Yield by Utilization of Genetic Resources. This project covered a 10-year period, starting from 1982 until now. Good progress has been made with joint efforts on both sides. Around 30 rice varieties (or lines) have been selected and bred out, such as He Xi No. 2, 4, 5, 10 and others which have an outstanding potential for yield increase. Due to his efforts in the organization and management of the project, Dr. S. Tsuru, one of the former Directors General of TARC, was awarded the International Agricultural Co-operation Prize granted by China's Ministry of Agriculture in 1992. While promoting the extension and utilization of new rice varieties, both sides have expanded the scope of research into bio-technological fields. The new research project, entitled Evaluation of Rice Genetic Resources through Bio-technological Procedures and Research Co-operation for the Utilization of Technology Development is being carried out smoothly. Besides, the joint research project on Heat-tolerant

Vegetables in Shanghai and co-operation research project on Detection and Prediction of Migratory Rice Insects which have been initiated recently by both sides are being carried out successfully.

Reviewing the past and looking forward to the future, we sincerely hope to maintain and develop the friendly co-operation relationship with the Japan International Research Center for Agricultural Sciences. Based on the successful current co-operation research projects and the extension of research findings, we hope to further expand research fields, such as agricultural bio-technology, evaluation and utilization of germ-plasm, breeding, integrated cultivation technology, agricultural environment, ecological and sustainable agriculture, improvement of agricultural, livestock and fish breeds and their raising technology, harvesting, processing, preservation and packaging of agricultural products. Both sides will explore the possibility of co-operation in other fields, identify new co-operation channels and implement new co-operation projects, relating to soil and fertilizer sciences, plant protection, mechanization in agriculture, farmland irrigation, regional integrated development, etc.

We firmly believe that we will make a new contribution to the agricultural development and friendly relations between our two countries and two peoples through further strengthening the exchanges and co-operation between both sides.

(Director General, Department of Science and Technology, Ministry of Agriculture, China)



Conditions of Fisheries and Approach to Fisheries Research in Asia and Pacific Region

Dr. Hiroshi Nakano

As in developing countries daily protein consumption is comparatively low, aquatic products are an important source of protein accounting for a high ratio to total consumption. Most of these countries plan to produce a larger quantity of aquatic products for the supply of protein for food and as a source of foreign currency through exports. China, Peru, Chili and some of the Southeast Asian countries have recently increased the output of fishery products by the promotion of aquaculture.

Modern technology should be introduced to the developing regions in taking account of the need for preserving the aquatic eco-systems and avoid the depletion of resources as in the case of prawn and tuna. Recently, fishing activities are being regulated by many governments. It is necessary for the promotion of sustainable fishery activities in these areas to obtain statistics for the management of the fish population as well as research on eco-systems and taxonomy of aquatic animals.

Extensive culture of carp, catfish and prawn has been developed in the Southeast Asian countries combined with paddy-crop and/or animal husbandry over a long period of time. Milkfish and giant tiger prawn have been cultured extensively in salty ponds. Aquaculture of prawn was practiced intensively due to the depletion of the population in natural grounds associated with overfishing. This intensive culture has led to the deterioration of the quality of aquaculture grounds, decrease in the growth rate and outbreaks of fish diseases. Seeds of these fish were caught by fishermen in natural nursery grounds for aquaculture. As a result, since a large amount of chemicals is used the cost of aquaculture is high. Therefore these countries switched from prawn aquaculture to seabass and red snapper, or resumed extensive milkfish aquaculture. Seeds of these fish were caught by fishermen in natural nursery grounds for aquaculture. As the supply of wild seeds is low and the cost too high for aquaculture, it is important to develop artificial seed production techniques, diet for first larvae, methods of breeding and control

of aquaculture grounds. For further development of aquaculture technology, it is important to carry out research on basic fields, including ichthyology, taxonomy, ecology, physiology, biochemistry, botany, planktonology, oceanography, etc.

Aquaculture grounds can be developed after mangroves which are natural breakwaters and growing areas of aquatic organisms are cut. Then the water purification capacity decreases and floods often occur in these mangrove areas. It is thus necessary to carry out ecological studies in the mangrove areas for the introduction of technology for the improvement of aquaculture grounds.

In most of the countries, half of the aquatic products are consumed in the fresh state, while the remainder is processed to salty dried fish products, traditional fish sauce and fish paste. Modern aquatic production industry has not developed except for the tuna canned industry, frozen prawn industry and fish meal industry, due to problems of transportation. In order to make the best use of fishes in these areas, it is important to carry out research on the chemical characteristics of traditional food, nutrition of fishes, food hygiene besides transportation systems. It is also important to upgrade the quality to be able to export aquatic products continuously.

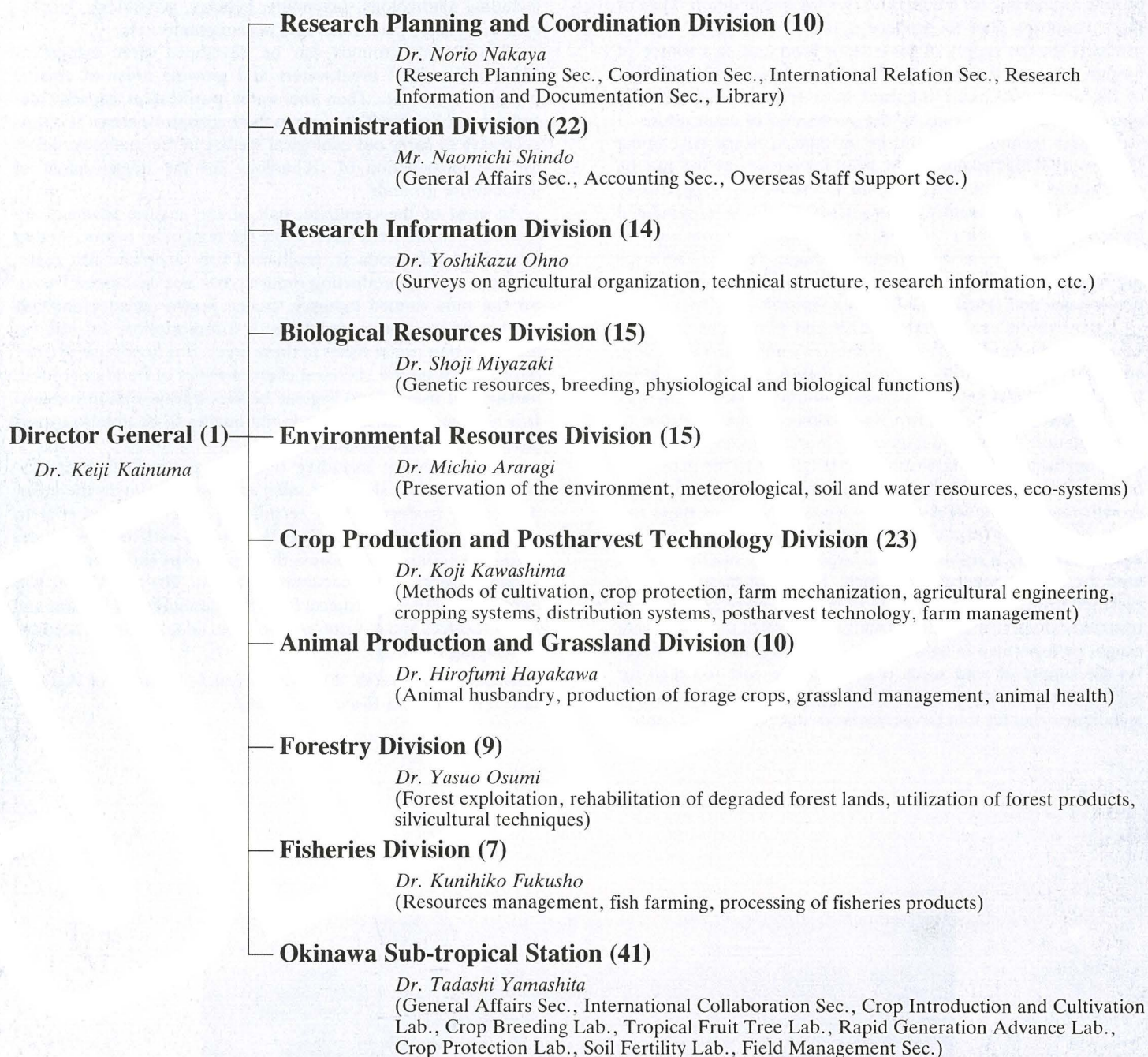
Many problems including overfishing, destruction of eco-systems, red tide, shell poisoning are associated with the introduction of modern fishery techniques. It is thus essential to develop appropriate technology in harmony with the natural and social environment to address these problems and promote sustainable fishery and aquaculture activities. The new Center will implement research projects from the standpoint of natural and social sciences and develop technologies adapted to the needs of developing countries.

(Division of Research, Fisheries Agency, Ministry of Agriculture, Forestry and Fisheries, Japan)



Organization of the Japan International Research Center for Agricultural Sciences (JIRCAS)

167 staff (123 scientists) as of 1 Oct. 1993



Notice

Due to the reorganization of the Tropical Agriculture Research Center (TARC) into the Japan International Research Center for Agricultural Sciences (JIRCAS), the TARC quarterly Newsletter will be published as JIRCAS Newsletter.

Japan International Research Center for Agricultural Sciences (JIRCAS)

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