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Sugarcane field with extensive damage caused by leaf-cutting ants
Inset: a forager of the species carrying grass leaf (Photo by K. Ichinose, see p4)

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JIRCAS
JAPAN INTERNATIONAL RESEARCH CENTER FOR AGRICULTURAL SCIENCES

1996 Annual Meeting for Review and Promotion of Research for International Collaboration

Keiji Ohga
Director, Research Planning and Coordination Division

The 1996 Annual Meeting for the Review and Promotion of Research for International Collaboration was held on February 26, 1997 in the International Conference Room of JIRCAS Headquarters.

A total of 54 participants attended the meeting, including representatives from various institutes affiliated to the Ministry of Agriculture, Forestry and Fisheries (MAFF) and from MAFF's Headquarters along with delegates from JICA (Japan International Cooperation Agency) as well as the Director General, Directors of Research Divisions, International Research Coordinators and several staff members of JIRCAS.

Following the introduction of the general situation relating to international research collaboration as well as the orientation of JICA activities, the overall research activities implemented by JIRCAS during the fiscal year 1996 were reviewed and discussed, including collaborative research projects, international symposium, seminars, workshops, various meetings, and JIRCAS Visiting Research Fellowship Program at Okinawa Subtropical Station and Tsukuba Headquarters.

During the present meeting, emphasis was placed on 1) JIRCAS Visiting Research Fellowship Programs, 2) comprehensive/multidisciplinary research projects, 3) research activities of Fisheries Division and at Okinawa Subtropical Station. Particularly, discussions were focused on the research direction of the comprehensive/multidisciplinary research projects and how to cooperate with national institutes in the pursuit of the projects.

In the session on specific topics, discussions were centered on the strategies for promoting collaborative activities in South America which is considered to have a high potential for food production. The current status of food supply and demand, evaluation of natural environment and present technologies adopted in crop production and animal production in the region were reported and discussed by the participants. These reports and discussions should provide useful information for the promotion of a new project entitled "Comprehensive studies on soybean improvement, production and utilization in South America". JIRCAS plans to initiate the project from 1997 fiscal year in collaboration with MERCOSUR countries such as Brazil, Argentina, Paraguay, etc. The project places emphasis on the following aspects, 1) consolidation of the collaboration with JICA, and utilization of CETAPAR (Centro Technologico Agropecuario en Paraguay) as the main research site of the project, 2) multidisciplinary studies on soybean improvement and utilization in the MERCOSUR countries through collaboration with researchers from Japan and South American countries.

Table 1. On-going comprehensive/multidisciplinary projects including new projects starting in 1997

Title	Site	Year
1. Evaluation and improvement of farming systems combining agriculture, animal husbandry, and fisheries in the Mekong Delta	Vietnam	1994-1999
2. Productivity and sustainable utilization of tropical and subtropical brackish water mangrove ecosystems	Malaysia	1995-2000
3. Development of sustainable agricultural technology in Northeast Thailand	Thailand	1995-2002
4. Comprehensive studies on the development of a sustainable agro-pastoral system in the sub-tropical zone of Brazil	Brazil	1996-2003
5. Development of sustainable production and utilization of major food resources in China	China	1997-2004
6. Comprehensive studies on soybean improvement, production and utilization in South America	MERCOSUR countries	1997-2007

Photo 1: Discussion at 1997 Annual Meeting

Yellow Butterfly Species (Genus *Eurema* Hübner) Causing Serious Defoliation in Forest Plantations of Albizzia, *Paraserianthes falcataria* (L.) Nielsen, in the Western Part of Indonesia

Ragil S. B. Irianto, Kazuma Matsumoto and Kusdi Mulyadi***

Albizzia, *Paraserianthes falcataria*, is a fast-growing multi-purpose tree widely planted in Southeast Asia. Outbreaks of a pierid butterfly species of the genus *Eurema* occasionally occur in albizzia plantations, leading to severe defoliation. The butterfly species had so far been identified either as *E. blanda* or *E. hecabe*, and some authors assigned it to both species. We investigated *Eurema* species occurring in forest plantations of albizzia in five localities in Sumatra, Java, and Kalimantan, and identified four species, *E. blanda, E. hecabe, E. alitha* and *E. sari*. When the yellow butterflies were abundant, *E. blanda* predominated. The population of *E. blanda* fluctuated widely, decreasing in the dry season and increasing in the rainy season, sometimes resulting in a population outbreak and total destruction of the foliage in the plantation. On the other hand, the population levels of *E. hecabe* and *E. alitha* were more stable, and *E. sari* seldom occurred. These species are therefore considered to be of minor importance as a pest of albizzia. *E. hecabe* which has been frequently reported to be "a serious defoliator of albizzia" could have been mistaken for *E. blanda., E. hecabe* and *E. alitha*, which had been mistaken for *E. hecabe* did not occur together in our samples.

*Forest and Nature Conservation Research and Development Centre
**Palembang Reforestation Technology Centre

Photo 1: Outbreak of Eurema blanda *(Benakat, South Sumatra Prov., May 1994)*

Photo 2: Total defoliation of an albizzia plantation by E. blanda *(Benakat, South Sumatra Prov., May 1994)*

Soil Loss from Pineapple Fields and Control

Kazuo Sugahara

For the last three decades, soil loading due to erosion in coastal marine environments has been serious in the Ryukyu Islands resulting in damage to the coral reefs surrounding these islands. The above soil loss can be ascribed to large-scale pineapple cultivation. Pineapple fields are located mainly on acidic red and yellow soils and receive an annual average rainfall of 2,100 mm with a slope ranging from 20 to 150 m in length and from 0 to 8° in gradient. Since the growth of pineapple plant is very slow, fields are not covered for a long time, so that soil erosion in pineapple fields becomes a serious problem. Rill erosion occurs frequently along roadsides because of agricultural practices, such as spraying of chemicals and shipping of products .

Photo 1: Effect of cover crops on the preservation of soil erosion in pineapple field

A set of four plots was used for the investigation of the effect of cover crops on the prevention of soil erosion from October 1993 to September 1994 (Photo 1). Ground nut (*Arachis pintoi*) and weeping lovegrass (*Eragrostis curvula*) were selected as cover crops. Each of them was planted on the lower edge of a slope. After the grasses grew well, soil erosion was effectively reduced. The alleviation of soil loss in the plots with ground nut and weeping lovegrass was 1/680 and 1/110 of the control plot, for 12 months after planting of pineapple. Another set of four plots was used for the investigation of the effect of nontillage planting on the prevention of soil erosion from October 1994 to September 1995. In the plot of nontillage planting, pigeonpea (*Cajanus cajan*) was cut down at about four months after the seedling stage, and then pineapple was planted without plowing. Nontillage planting reduced soil erosion effectively from October 1994 to May 1995. However, the effect disappeared after June 1995, because the residues of pigeonpea decomposed during this period. The alleviation of soil loss in the plot of nontillage planting was 1/14 of the control plot for 8 months after planting of pineapple. In conclusion, we recommend that farmers employ cover crops and practice nontillage planting for the protection of the soil surface. Organic mulch is less suitable because of the scarcity of labor and materials.

Studies on Geographical Distribution of Leaf-Cutting Ants and Damage to Agriculture Caused by the Ants in Brazil

Katsuya Ichinose

Leaf-cutting ants cut parts, especially leaves, of plants for cultivation of fungi, on which their immature forms feed (Photo 1). Due to this harvesting behavior, the ants are recognized as one of the most important pests in Central to South America, though neither the geographical distribution of the ants nor their damage to agriculture is well-documented. We carried out surveys on the geographical distribution of leaf-cutting ants in Brazil from 1993 to 1996 and the distribution of the species in various regions, their density and the extent of the damage to agriculture caused by the respective species were eventually elucidated (Fig. 1). Along with the survey on the distribution and density of leaf-cutting ants in the regions, we asked farmers at some locations whether they encountered problems with leaf-cutting ants or not. The information enabled to determine the presence or absence of damage by the ants.

Table 1. Distribution of leaf-cutting ants

Species	Distribution	Density (nests/ha)	Rating
Ac. balzani	SOE, CEW	2500	occasionally serious
Ac. fracticornis	SOU	700	occasionally serious
Ac. landolti	NOR, NOE	1500	occasionally serious
Ac. striatus	SOU	4	serious
At. bisphaerica	SOE, CEW	5	locally serious
At. capiguara	SOE, CEW	48	serious
At. cephalotes	NOR, NOE	2	locally serious
At. goiana	CEW	5	locally serious
At. laevigata	All	6	serious
At. sexdens	All	6	serious

Abbreviations: Northern region (NOR), Northeastern region (NOE), Central western region (CEW), Southeastern region (SOE), and Southern region (SOU)

The leaf-cutting ants rated as serious pests for agriculture in Brazil are as follows: *Acromyrmex balzani, Ac. fracticornis, Ac. landolti, Ac. striatus, Atta bisphaerica, At. capiguara, At. cephalotes, At. goiana, At. laevigata, At. sexdens*. Comparison of the data with those obtained previously suggests that the distribution of the species listed in Table 1, especially *At. capiguara*, and *At. goiana*, had expanded in these decades to regions where few or none of them had been found or reported in the past. Scientists point out that incipient (less than one year old) nests of these ants (Photo 1) are very susceptible to and easily destroyed by tillage. Hence damage by the ants may increase with the adoption of nontillage cropping which is currently recommended by agricultural institutes in Brazil. Similarly the incidence of *At. cephalotes, At. laevigata* and *At. sexdens* in the Amazon region may increase with the progression of logging or land development. Thus damage to agriculture by leaf-cutting ants in regions where there is at present little or no problem is likely to increase with time.

Hence, we have to pay attention to the expansion of the distribution of leaf-cutting ants for the control of the ants.

Photo 1: The fungus garden (white spherical form), on top of which the queen stands, of an incipient nest of At. bisphaerica. *This nest was established in soil at a 20 cm depth.*

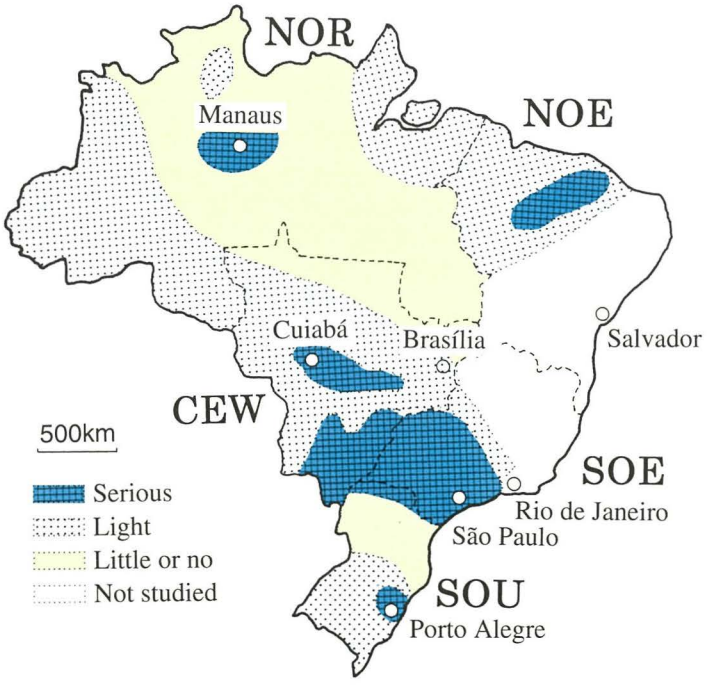

Fig. 1. Estimation of damage to agriculture caused by leaf-cutting ants in Brazil.
Regions are divided by broken lines and abbreviations for the regions are the same as in Table 1.

Wide Adaptability of New Rice Cultivars in Yunnan Province of China

Kazuo Ise, Sun Youquan, Liu Jishin*, Zhou Tiande*, Satoru Kudo**,Yoshihiro Sunohara*** and Jiang Zhinong**

The collaborative research project for rice breeding using a wide diversity of genetic resources has been conducted in Yunnan Province of China since 1982. The new rice cultivars developed through the joint project have been widely grown in and around the province. In 1996, the total acreage of these cultivars covered more than 170,000 ha, accounting for nearly 20% of the total rice-growing area in Yunnan.

In 1996, two rice cultivars, 'Hexi 34' and 'Hexi 35', were developed and newly released by the project; they will be officially registered by the Yunnan provincial government. Hexi 34 was developed from the cross 'Yunxi 2'/'Dianyu 1', and Hexi 35 from the cross 'Hexi 15' /' Hexi 4'. The pedigree of these new cultivars, can be traced to some Japanese rice genetic resources: a high-yielding cultivar 'Todorokiwase', a cool weather-resistant cultivar 'Narukaze', blast-resistant germplasm accessions 'BL 1' and 'BL 6', and others.

Table 1. Main agronomic characters of 'Hexi 34' and 'Hexi 35'

Character	Hexi 34	Hexi 35	Yunkeng 9 (Standard)
Maturity	Medium	Medium	Medium
Plant Height (cm)	88	93	115
Lodging Resistance	HR	HR	S
Cool Weather Resistance	MR	MR	R
Blast Resistance	HR	M	R
Grain Appearance	Good	Good	Poor
Eating Quality	Good	Good	Poor
Yielding Ability (%)	112	121	100

Notes: HR, high resistance; MR, moderate resistance; M, moderate; S, susceptible

The principal reason for releasing these two cultivars is that they display a higher yielding ability than that of current japonica-rice cultivars grown in Yunnan, which is the most important factor in crop production in China. Hexi 34 and Hexi 35 performed very well in the uniform trials conducted at twelve sites representative of the japonica-rice growing areas in the central and northern parts of Yunnan. In twenty-four tests across twelve locations during a two-year period, the average yield of Hexi 34 and Hexi 35 was 8.55 and 8.80 t ha^{-1}, respectively, compared with 7.10 t ha^{-1} for the standard cultivar 'Yunkeng 9'.

We conducted a statistical analysis of adaptation based on the data of the uniform trials using the linear regression method and principal component analysis. The regression coefficients on the mean yield of each environment of Hexi 34 and Hexi 35 were smaller than those for other tested cultivars. The findings indicate that these cultivars are well adapted to various kinds of environments in Yunnan. The results of principal component analysis also revealed the high-yielding characteristics and wide adaptability of Hexi 34 and Hexi 35.

The cooking and processing qualities of Hexi 34 and Hexi 35 are superior to those of the standard cultivar 'Yunkeng 9' in Yunnan. Milled kernels of Hexi 34 and Hexi 35 are nonglutinous and nonaromatic; they are translucent in contrast to those of Yunkeng 9, which show a pronounced white belly. Taste panelists rated Hexi 34 and Hexi 35 as satisfactory in the sensory tests of steamed rice. Recently, the living standard in urban areas of China has been rapidly rising, resulting in a remarkable increase in the demand for rice with good taste. These two new cultivars should meet the demand for good quality rice.

Finally, we should pay careful attention to the shift in the frequency of the blast fungus races, because Hexi 34 and Hexi 35 exhibit a race-specific resistance to rice blast disease. These cultivars could be widely grown in and around the Yunnan Province, because of their high yielding ability and high grain quality as mentioned above. However, breakdown of the blast resistance is common in many rice-growing areas, often shortly after the release of cultivars with race-specific resistance. Rice blast is the most devastating disease in Yunnan japonica-rice growing areas. We should develop breeding strategies for durable resistance to reduce the impact of rice blast disease by using the abundant rice genetic resources of Yunnan and Japan.

Photo 1: Rice cultivation in a basin near Kunming City, Yunnan Province. Rice plants (right) belong to a new cultivar 'Hexi 35'. Mountainous regions account for about 84% of the total area in the province. Cultivation of japonica-rice for high yield is conducted in a small number of basins at an elevation of 1,500 to 2,000m.

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*** Fujisaka Branch of Aomori Agricultural Experiment Station, Japan

Identification of *Meloidogyne* Species Including a New Species Based on Enzyme Phenotypes in Thailand

Yukio Toida

Species of root-knot nematodes (*Meloidogyne* spp.), the most important pests of crops among nematodes in Thailand, were identified based on the phenotypes of esterase and malate dehydrogenase by electrophoresis, which are more reliable than those based on morphological characters of the female perineal pattern.

Two distinct bands of esterase (Est: A2) and one or three bands of malate dehydrogenase (Mdh: N1, N3) were observed in *M. arenaria*. One clear broad band of Est (VS1) in *M. graminicola*, one band each of Est (I1) and Mdh (N1) in *M. incognita,* and three bands of Est (J3) and one band of Mdh (N1) in *M. javanica* were revealed respectively (Table 1). Two of the nematode populations examined did not show any band pattern of the enzyme.

The population collected from a weed in Bangkok displayed three bands of Est and two bands of Mdh, suggesting the presence of an unrecorded species in Thailand (Photo 1).

The population collected from mulberry plants in Udon Thani which exhibited one band of Est and two bands of Mdh (Photo 1) belonged to a new species based on the specific phenotypes of esterase and malate dehydrogenase and the unique morphological characters of the female perineal pattern (Photo 2). This is the second record of a new species of *Meloidogyne* in Thailand since the discovery of *M. microcephala* (Cliff *et al.*, 1984). The new species occurred in large numbers in mulberry fields at Udon Thani Sericulture Research Center and also on some ornamental plants around this area.

As mulberry plants in this area are seriously damaged by this species (Photo 3), methods of control against the nematode attacking mulberry should be developed.

Table 1. Phenotypes of esterase and malate dehydrogenase of *Meloidogyne* species in Thailand

Meloidogyne	Host plants	Phenotypes	
		Est	Mdh
M. arenaria	Cucumber	A2	N3
do	A weed	A2	N1
M. incognita	Tomato	I1	N1
M. javanica	Eggplant	J3	N1
M. graminicola	Upland rice	Vs1	?
Meloidogyne sp. 1	Mulberry	1	2
Meloidogyne sp. 2	A weed	3	2

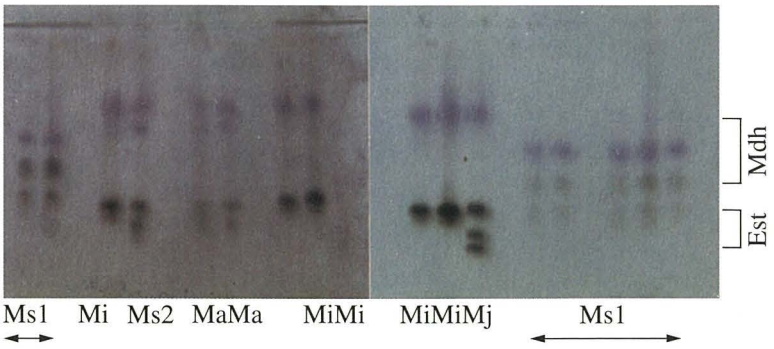

Photo 1: Polyacrylamide gel (Phast System) showing esterase and malate dehydrogenase phenotypes of females of Meloidogyne *Ma:* M. arenaria, *Mi:* M. incognita, *Mj:* M. javanica, *Ms1: new species, Ms2: unrecorded species in Thailand*

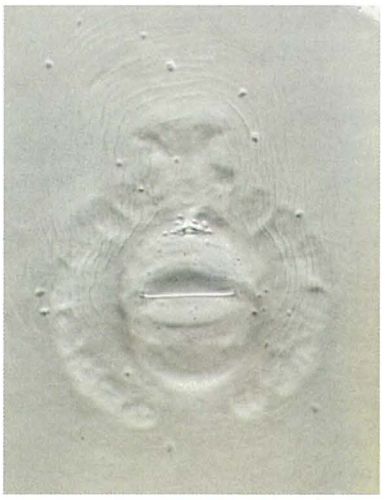

Photo 2: Perineal pattern of a new species of Meloidogyne *on mulberry in Udon Thani*

Photo 3: Mulberry root damage caused by a new species of Meloidogyne

≪Topics≫

JIRCAS Symposium on Status and Requirement of Minerals in Ruminants in Thailand

— Current Knowledge and Future Research —

Tomoyuki Kawashima

The role of animal industry is becoming increasingly important in the agricultural sector due to the strong demand for protein in Thailand. The annual rate of increase of milk production in the country was the highest in Asia and the Pacific region in the past decade. The consumption of commercial concentrate feed as well as supplement feed has increased very rapidly.

JIRCAS had dispatched two researchers (K. Nishimura, T. Kawashima) to carry out collaborative studies in the field of animal nutrition with the Department of Livestock Development (DLD), Thai government. The field of mineral nutrition was one of the key subjects in their projects. It is still not clear, however, whether the formula applied for the commercial mineral supplements is the most suitable for the conditions in Thailand, as the information both on the mineral contents in the feed and on the requirement of minerals by animals in Thailand is very limited.

Therefore, the JIRCAS symposium entitled "Status and requirement of minerals in ruminants in Thailand — Current knowledge and future research —" was held on May 9, 1997 in Bangkok, Thailand, aiming at presenting research results on mineral nutrition in the country in order to determine the general characteristics of the mineral status of cattle and buffalo in the country and to identify the research themes required for the future. The symposium was divided into the following three sessions:

1. Identification of mineral status in animal production
2. Influence of minerals on ruminant physiology and productivity
3. General discussion on "Future research strategies on mineral nutrition in Thailand".

The proceedings will be published as JIRCAS Working Report Series.

Photo 1: Participants in, and presentation, at the symposium

PEOPLE

Akihiko Nishiyama became Director of JIRCAS's Administration Division on April 1. He was until recently Deputy Director of International Trade and Tariff Division, Ministry of Agriculture, Forestry and Fisheries (MAFF). He also served as Consul at the Consulate-General of Japan in Los Angeles, USA (1991-1994) as well as at MAFF's Research Council Secretariat.

Teruo Ishige became Director of JIRCAS's Biological Resources Division on April 1, succeeding Dr. Shoji Miyazaki who was transferred to the National Institute of Agrobiological Resources (NIAR). Dr. Ishige, a plant cell biologist, worked successively as Head, Plant Cell Breeding Laboratory of NIAR (1988-1995) and Senior Research Coordinator of MAFF's Research Council Secretariat (1995-1997).

Eitaro Imaizumi, an animal nutritionist, succeeded Dr. Hirofumi Hayakawa as Director of JIRCAS's Animal Production and Grassland Division on April 1. He initiated his research career at Hokkaido National Agricultural Experiment Station (1963-1981). During his former assignments at JIRCAS (formerly TARC), he served as Research Coordinator (1987-1990) and Head of Research Planning Section (1990-1993), after working on animal nutrition in Malaysia (1981-1983).

Shiroh Uno, a biological oceanographer, replaced Dr. Kunihiko Fukusho as Director of JIRCAS's Fisheries Division on April 1. Dr. Uno carried out most of his research work on coastal ecology at Nansei National Fisheries Research Institute (1974-1982) and Seikai National Fisheries Research Institute (1983-1994). Before joining JIRCAS, he was Director of Japan Marine Science and Technology Center (1994-1997).

OBITUARY

We were saddened to learn that Dr. **Noboru Yamada**, first Director General of the Tropical Agriculture Research Center (TARC, reorganized to JIRCAS in 1993), passed away on 18 May 1997 at the age of 85. Dr. Yamada, who graduated for The University of Tokyo (1938) and then spent most of his research career at the National Institute of Agricultural Sciences, was a distinguished crop physiologist and his work on the physiological mechanism of flooding tolerance of rice plants had been highly evaluated by the scientific community. Dr. Yamada also served successively as an expert under the Colombo Plan, as Regional Officer of FAO in Bangkok and as a consultant to the Asian Development Bank. In 1970, he became the first Director General of TARC. Through his scientific achievements and strong commitment to the promotion of international collaboration in the field of agriculture, Dr. Yamada displayed the leadership required for laying a firm foundation for the activities of TARC and subsequently JIRCAS.

The 4th JIRCAS International Symposium

Sustainable Agricultural Development Compatible with Environmental Conservation in Asia

Hisataro Horiuchi

The 4th JIRCAS International Symposium on "Sustainable Agricultural Development Compatible with Environmental Conservation in Asia" organized by Japan International Research Center for Agricultural Sciences (JIRCAS) in cooperation with the National Agriculture Research Center (NARC), National Institute of Agro-Environmental Sciences (NIAES), National Research Institute of Agricultural Economics (NRIAE) will be held at Tsukuba Science City during the period August 26-28, 1997. The subject of the symposium covers the current situation of and future prospects for sustainable agricultural development in Asia.

This symposium attempts to highlight the swelling demand for food, the decline in food self-sufficiency and to discuss possible solutions that would enable to achieve sustainable food production and preserve the environment simultaneously. In many Asian countries, recently, rapid economic growth has been altering the balance between food supply and demand. On the demand side, the rising household incomes and population are causing an overall expansion of food demand and a shift in its composition. On the supply side, the "Green Revolution" that had led to a remarkable increase in food production in Asia since the 1960s seems to be losing its momentum. Asian agriculture is also being confronted with many serious environmental constraints associated with the increased application of chemical inputs, urbanization, deforestation and desertification. One may wonder to what extent Asian green resources and technologies will be able to sustain the swelling demand for food. With the huge population in Asia, a decline in food self-sufficiency would make the world food market more volatile. This symposium attempts to highlight these issues and to discuss possible solutions.

The symposium consists of a keynote speech and three sessions (1, 2, 3). The keynote speech delivered by Dr. George H. L. Rothschild, Director General of IRRI, Philippines is entitled: "Main Issues for Sustainable Agricultural Development in Asia". The theme of Session 1 covers "Food Problems in Asia". Papers to be presented include :

- Brief Introduction by Chairperson. Wen S. Chen (Taiwan)
- Asian Food Supply-Demand Situation from Global Perspective. Osamu Koyama (Japan)
- Food Problems and Outlook in China. Ke Bing Sheng (China)
- Food Problems and Outlook in Southeast Asia. Nipon Poapongsakorn (Thailand)

The theme of Session 2 covers "Agriculture and Environment in Asia". Papers to be presented include:

- Sustainable Agriculture and Environment. Dennis Keeney (USA)
- Global Warming and Sustainable Agriculture. Katsuyuki Minami (Japan)
- Technology for Conservation of Soil and Water Resources in China. Zhao Qi Guo (China)
- Technology for Conservation of Soil and Water Resources in Korea. Pil-Kyun Jung (Korea)
- Material Balance and Ecological Functions of Paddy Farming in Japan. Hidenori Iwama (Japan)
- External Economies of Agriculture. Eiichiro Nishizawa (Japan)

The theme of Session 3 covers "Technological Issues after the Green Revolution". Papers to be presented include:

- JIRCAS Projects for the Development of Technologies for Sustainable Agriculture in Asia. Makie Kokubun (Japan)
- Development of Rice Production Technology in Southeast Asia. Nobuyuki Kabaki (Japan)
- Development of Rice and Wheat Production Technology in India. I. P. Abrol (India)
- Rural Development through Farming Systems Research. Achmad Suryana (Indonesia)
- Rural Development through Integrated Farming Systems Combining Agriculture, Animal Husbandry and Fisheries. Dang Kim Son (Vietnam)
- Strategy for Rice Production Technologies at IRRI. Osamu Ito (Philippines)

Photo 1: JIRCAS's Main Building in May

ISNAR-JIRCAS Meeting was held at JIRCAS

The Japan International Research Center for Agricultural Sciences (JIRCAS) and International Service for National Agricultural Research (ISNAR) jointly organized a "Project Planning Meeting on Research Management" which was held in Tsukuba during the period 24-27 March, 1997. The objective of the meeting was to discuss priority themes in the project on two subjects: the Management of Information and the Management of Biotechnology. During the meeting the strategies by which research managers and policy makers in Asia recognize the importance of information technology and biotechnology were discussed. During the meeting discussions were also held on the preparation of a series of seminars for the research managers who are responsible for the drafting of information and biotechnology programs. In addition to the participants from ISNAR, including Dr. Stein Bie, Director General, and JIRCAS, heads of the representative NARSs and several ASEAN (Association of Southeast Asian Nations) countries attended the meeting.

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