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Hornless (poll) Boran cattle in ILRI's pasture field
(Photo by Eitaro Imaizumi)

CONTENTS

JIRCAS
JAPAN INTERNATIONAL RESEARCH CENTER FOR AGRICULTURAL SCIENCES

Social Sciences at JIRCAS

Kunio Tsubota
Director, Research Information Division

One basic feature that differentiates JIRCAS from its predecessor, the Tropical Agriculture Research Center (TARC) is the increased role of social sciences in the research activities. This reflects the fact that food and agriculture problems are becoming more global, complex and inter-linked. Even for research and development projects, many developing countries often express their concern about the socio-economic implications, sustainability, and environmental aspects of the developed technologies. It is widely recognized that these issues can be better addressed through a close collaboration between natural and social scientists.

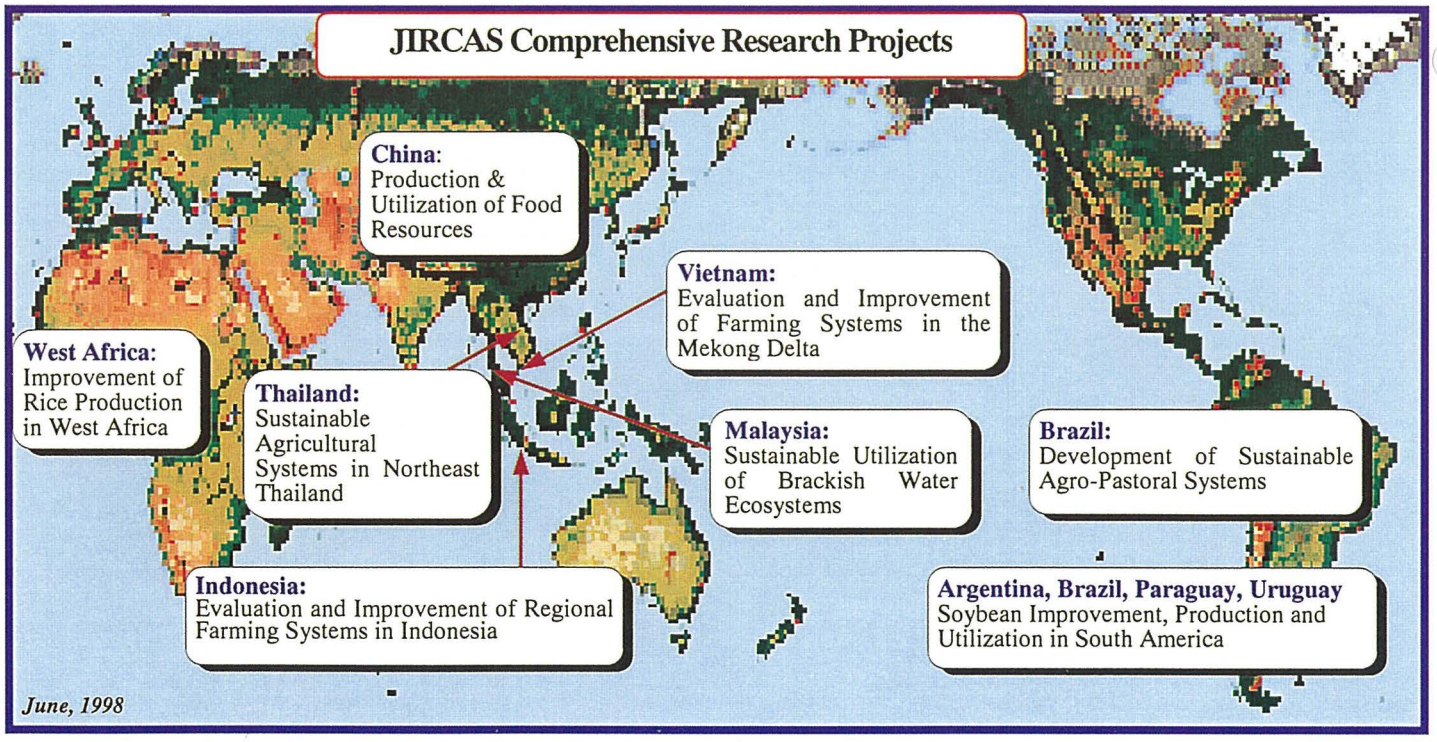
The recent trend of JIRCAS to place more emphasis on multidisciplinary and comprehensive projects follows the same line. JIRCAS is convinced that project goals are better achieved if social scientists work together with natural scientists before and during the project. Social scientists are often expected to play a bridging role in a multidisciplinary project by considering individual technologies within a broader context of the socio-economy of the countries concerned. Nowadays agro-economists and rural sociologists are expected to play an important role in the JIRCAS comprehensive projects.

In the Mekong delta project, agro-economists are evaluating the sustainability and expansion capacity of the specific crop-livestock-fish farming system. This would assist, in particular, the natural scientists who are dealing with technological problems relating to pig raising and aquaculture. In the northeastern Thailand project, economists are projecting the demand for livestock products and analysing the comparative advantage of various farm and non-farm sectors, while other researchers carry out studies on the improvement of cropping systems as well as feed supply capacity including the use of sugarcane by-products as cattle feed. A rural sociologist and economists are carrying out preliminary studies to assess the validity of the farming systems research approach in Indonesia which may result in a more efficient dissemination of improved technologies.

Apart from the social scientists engaged in the collaborative projects overseas, some JIRCAS economists are conducting more general studies at the headquarters, including world demand-supply projections and policy simulations based on econometric models. The models can illustrate possible changes in world commodity markets under different scenarios. As an example, by linking these models with national models, we expect that more precise predictions will be made for specific commodities such as soybean in Brazil. Attempts are also made to modify the models so that environmental factors can be incorporated.

The methodologies used by JIRCAS social scientists vary. Many rely on econometric methods while some use farm budget or cost-benefit analysis. Others adopt more qualitative or institutional approaches including farming systems research.

In spite of the growing demand, currently JIRCAS has only a few social scientists in its staff. To fill the gap, two institutes affiliated to MAFF, the National Research Institute of Agricultural Economics and the National Agriculture Research Center, assign their economists and sociologists to work as short-term visiting researchers in JIRCAS projects abroad. Some visiting foreign researchers who stay at JIRCAS also assist JIRCAS social scientists in such fields as econometric analysis or country economic studies.



Economic Models for Brazilian Farm Management

Hideki Ozeki

JIRCAS has been implementing the collaborative research project titled "Development of Agro-Pastoral Systems in the Subtropical Area of Brazil" with EMBRAPA in Brazil since 1996. As part of this project, Dr. Yoshihiko Sugai and myself have been constructing economic models in collaboration with several economists of EMBRAPA for evaluating the Brazilian agro-pastoral sector from both micro and macroeconomic viewpoints. The selection of appropriate models is an important issue. In this study, three models were used for evaluating the sector at different levels. The models consist of 1) evaluation model for agro-pastoral systems at farm level, 2) spatial equilibrium model at regional and national levels (EMBRAPA) and 3) input-output model for agro-industries at national level. Each model can work independently, but will be linked by using simulation results from the other models as exogenous variables. In addition, 4) assistant external systems for the three economic models supply exogenous factors.

The first evaluation model for agro-pastoral systems, based on revised linear programming method, aims at evaluating the financial superiority of improved agro-pastoral farming systems i.e. the mixed, multiple-cropping systems with crop-pasture rotation. It examines the optimum resource allocation to the farm of the new technology.

The second spatial equilibrium model has been developed by EMBRAPA to evaluate the new agricultural technology and policies at the national level. It takes account of the geographic conditions as well as economic conditions and thus calculates the optimum allocations of production units including agro-pastoral ones. A trial calculation (SEA/EMBRAPA, 1998) shows that optimization of present resource allocation raises the quantity of grain production by 20% over the actual level of the 1993~95 period. If 70% of the farmers were to adopt the improved technology, grain output would increase by 53%. Though the farmers in the grain production area are willing to introduce the improved technology, poor transportation network discourages their activities and leaves the potential unexploited.

The model is built mainly for the grain sector presently, but in the near future, plans are made to include the livestock sector too. Moreover, geographic information system (GIS) will be introduced into this model to visualize the large output produced by the simulation.

The third input-output model for agro-industries evaluates the impact of the changes in the macroeconomic conditions, for instance, the changes in total agricultural output, grain import prices, etc. Especially it enables to analyse quantitatively the nation-wide relationships among agriculture, food processing industries and other related industries. As the categorization of input-output tables published by IBGE (Instituto Brasileiro de Geografia e Estatistica) is too simple, the tables were rearranged based on a definite mathematical model. Fig. 1 depicts a part of the estimation results. It assumes first that the soybean exports could increase by 1 million tons as a result of changes in the agricultural policy or trade policy. In the first scenario, 1 million tons of soybean are assumed to be exported as grains (CASE 1). In this scenario, 167 million R$ of GDP (Gross Domestic Product) could be induced mainly in the soybean production sector, while the impact on the other industries and services is likely to be negligible. The second alternative assumes that 1 million tons of soybean are exported in the form of soybean products (oils, card, etc.) (CASE 2). In this scenario, 283 million R$ of GDP will be induced in the soybean production sector, the vegetable oils industry and other industries. This trial calculation suggests that the economic impact of exports as "processed and value-added products" will be larger and broader than in the case of "primary or raw materials".

The fourth assistant external systems include the 1995 Agricultural Census published by IBGE and the world food model developed by JIRCAS. We plan to incorporate the results of former large statistics and the latter into the economic models and to develop a data bank of census results to enable researchers to retrieve these data easily.

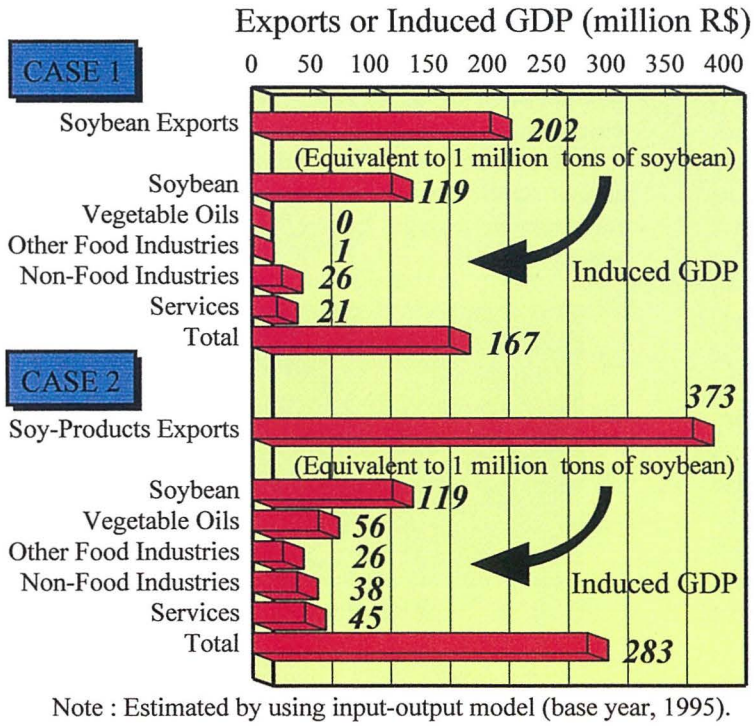


Fig. 1. Induced GDP by exports of soybean or soybean products. (equivalent to 1 million tons of soybean)

Projecting the Future World Food Situation

Osamu Koyama

The situation of food supply and demand in the future is a matter of serious concern. The issues currently addressed are whether agriculture in the world will be able to continue to supply adequately food to the increasing population, and whether the present regional imbalances in food supply will be solved in the future. If these issues are solved, what will be the price level and the technological level? To answer these questions, many research organizations are conducting analyses on the future food supply and demand situation. JIRCAS also examines the future orientation of agricultural technology development, analyses domestic and overseas policies for agriculture and conducts projection studies.

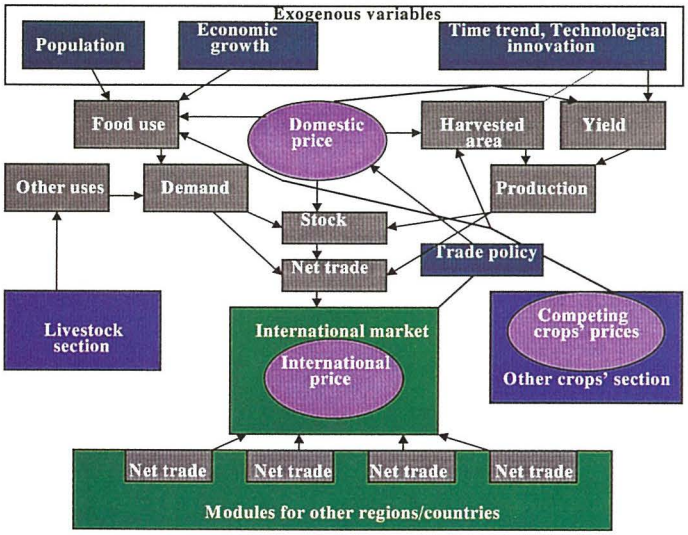


Fig. 1. Data flow chart of IFPSIM (example of cereals for a region/country).

For the past 35 years, mankind has succeeded in achieving a food production level above population increase. The relative price of grains has declined almost consistently. Thus, many projections relying on long-term past trends all reach optimistic conclusions. However, the recent trends, mainly those of grains, have led to some discrepancies about the future situation. In the late 1980s, the world food output per capita began to decrease, along with issues related to the degradation of the global environment, stagnation in technical development and lower investment in agriculture. Consequently, discussions about the world production potential have been rekindled.

Econometric models are widely used in many projections. In the models, the relationship among various factors to the food supply and demand is translated into formulae in an econometric way using past and present data. The International Food Policy Simulation Model (IFPSIM) used at JIRCAS is such a model (Fig. 1). It consists of a combination of 14 main food commodities models. It covers the entire world divided into 31 countries and regions.

The external conditions given to the model and the parameters in the model determine the outcome of the projections. Especially important are the rates of population growth, income rise, technological changes related to yield per unit acreage, etc. Income elasticity, the factor indicating the impact of income on demand for food, plays a decisive role, too. According to the tentative baseline projection to the year 2020, the rate of increase of grain production will amount to about 2% per year, a higher value than the estimated population growth. The demand for soybeans and livestock products is estimated to be much higher than the population increase. The key to a higher food supply in the future is a higher yield per unit area. The yield level is markedly affected by, among others, the ratio of irrigated areas and that of areas planted with high-yielding varieties. In addition, the input of fertilizers and agricultural chemicals will be an important factor in the future. Further econometric analyses of these elements are required .

Fig. 2 shows the outcome of several scenarios studies, one of the advantages of model analysis. In the scenario where the rate of increase of the yield of crops will gradually decline to half of the recent trend owing to the environmental issues and limited supply of resources, it is anticipated that world grain prices will continue to rise. In the second scenario a wide crop failure of grains and soybeans is predicted leading to high prices of agricultural commodities. It is feared that such high price levels will adversely affect low-income countries relying on inexpensive imported food. In the third scenario where it is predicted that prices will decrease, it is assumed that economic growth will slow down. However, it should be noted that lower food prices do not always result in a higher nutrition level.

In a quarter of century from now, the need for increasing food production may become less acute than presently. However, it may not be possible to continuously increase production or to keep the current production level in future without sacrificing resources and the global environment. On the other hand, even an optimistic forecast warns that the 800 million undernourished population in the world may not decrease appreciably . Through the modeling studies, attempts are made to examine the overall direction of problems facing world agriculture. The outcome of these studies should provide a clearer view of the issues which may become beyond control unless serious attention is being paid now.

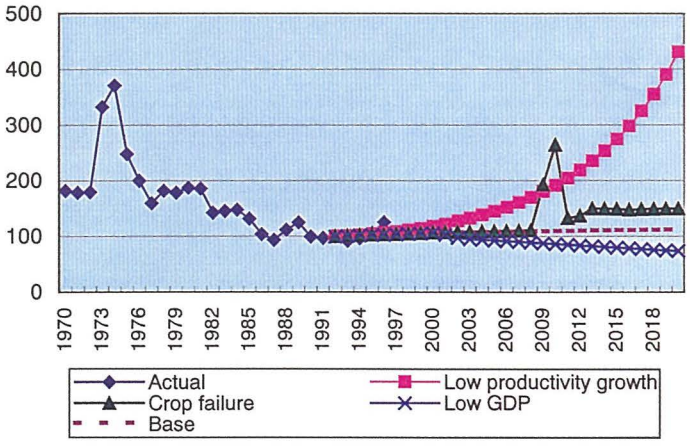


Fig. 2. Simulation of grain price (index: 1992=100).

Research Collaboration with CASER Focusing on the Farming Systems Research Experiences in Indonesia

*Junko Goto and Henny Mayrowani**

CASER, the Center for Agro-Socio-Economic Research, and JIRCAS have started a new collaborative research project. This new study currently titled "A study on the farmer-state linkages in upland farm development in Indonesia" aims to trace the history of FSR development in Indonesia and to conduct an in-depth case investigation of the extent of farmers' participation in the on-going FSR activities. Here, we would like to introduce briefly the background and key questions of our proposed research.

Since the heyday of the Green Revolution in the 1970s, a farming systems approach has become a popular exercise among researchers, extension workers, and agricultural officials working in and for the developing countries throughout the world. Though diverse in methods and applications, it emphasizes a farmer-first attitude and bottom-up participatory procedure as well as a multi-disciplinary team play. Indonesia is no exception. The history of farming systems-oriented research in Indonesia can be dated back to the period of cropping systems research in the early 1970s under the strong influence of IRRI. Agricultural research in those days focused mainly on lowland, i.e., rice production, so that the large growing population would not go hungry. FSR gradually expanded to rainfed areas and, to some extent, to less-favored agricultural areas such as swamp areas and upland areas.

The diversity of agroecosystems and the complexity of traditional agricultural practices prevailing in Indonesia offered an ideal ground for field investigations. Over the years, FSR incorporated various new challenges for the agricultural research community by exploring crop-livestock integration, agroforestry practices, rice-fish production combination, and so forth. Some latest studies also emphasize social and economic issues such as gender perspectives, credit institutions, and marketing strategies for farming households and communities. What can we extract from this rich, yet, rather unexplored history of research efforts? How was the English term "farming systems research" interpreted and adopted? How can we find the interaction between the foreign influence and the indigenous elements? And how can we identify the current position of farming systems research in Indonesia? These are our basic questions.

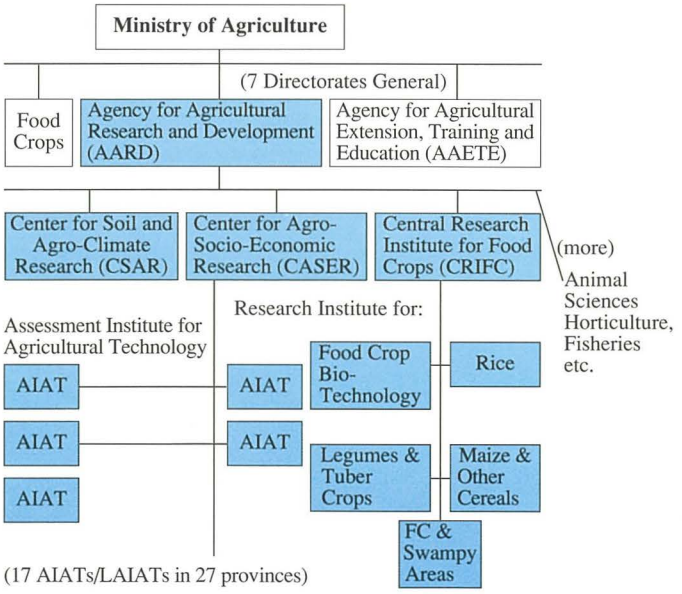
We would like to elaborate a little on the "who" question — the main actors in the implementation of FSR in Indonesia. In the 1970s and early 1980s, the technical and financial assistance from outside the country played an important role in disseminating the concept of farming systems approach, training the researchers and extension workers, and formulating various on-farm research projects. The degree of foreign commitment may vary from one project to the other. Nevertheless, the Indonesian research institutes under the Agency for Agricultural Research and Development (AARD) of the Ministry of Agriculture became the core organizations for FSR activities.

AARD organizations have undergone several changes during the past quarter of century reflecting the changing needs and priorities for agricultural research of the people and the government. Historically, the current Central Research Institute for Food Crops (CRIFC) has been the leading institute in organizing FSR, while other institutes such as Animal Sciences Institute, Horticulture Research Institute, and CASER also took part in the FSR activities as supporting institutes. In spring 1995, as part of the effort to decentralize the AARD system and to promote locally adaptive research, Assessment Institutes for Agricultural Technology (AIATs) were established throughout the country to carry out region-specific research and extension. CASER was assigned to supervise the activities of AIATs in conjunction with CRIFC and other AARD institutes. Thus, AIATs have become the leading agents for the promotion of farming systems approach. At present, SUTPA (*Sistem Usahatani Berbasis Padi dengan Orientasi Agribisnis*) program, rice-based market-oriented farming systems research program, is the best known operation for most AIATs. Yet, AIAT activities are not limited to lowland, rice-based areas. In spite of the abundant evidence of high expectation for their work, there seems to be a lack of information regarding their day-to-day operation, coordination with local governments and other agents, and linkage and interaction with local farmers. Who will work with AIATs in specific localities? How do local farmers perceive their efforts? We would like to adopt a case analysis approach in answering these questions.

Since 1995, CASER has organized several research projects on various aspects of AIATs activities with some assistance provided by ISNAR and IBRD. Compared to this rather large-scale, top-down examination, the proposed study should adopt a low-key, bottom-up approach in clarifying the role of AIATs, the challenges and limitations they face, and possible innovations and improvements in the existing system. We will use the case of an on-going farming systems research project for upland areas conducted in West Java as a window and the broader historical review as background. We expect that this study will generate a dialogue across disciplines and enhance communication and coordination between researchers and extension workers.

* *Center for Agro-Socio-Economic Research, Bogor, Indonesia*

Organizational Structure for Farming Systems Research Operation



Demand for Livestock Products and Feed in Southeast Asian Countries: Preliminary Projections

Hiroaki Kobayashi

The trend of feed demand in so-called "Dynamic Asia" will play an important role in this field. The current study aimed at estimating the potential demand for livestock products and feed in the near future in some Southeast Asian countries, i.e., Thailand, Indonesia, the Philippines and Malaysia.

We attempted to estimate the demand for livestock products and subsequent feed demand, maize in particular by a simple model. Detailed analyses of feed grains production will be conducted in future studies. Although the model in this study is still incomplete, we estimated the potential demand for maize for feed use in the above four countries up to the year 2004. The ongoing model comprises 43 equations. Feed production in these countries seems to have peaked in recent years, and the potential demand in the future may affect the world grain market directly (Fig. 1).

Table 1 shows the estimated results of demand functions of livestock products. While income elasticities of demand for meat and eggs in Thailand are 0.22 and 0.21, respectively, the elasticities of other livestock products are relatively high, indicating that a larger increase in demand associated with economic growth can be expected. Price elasticities of demand for meat and eggs are estimated to be very low, i.e., in the range from –0.01 to –0.12, because we used maize prices in the world market as proxies of those of the final products. Price elasticities for dairy products were estimated to be much higher.

Using the estimation results of demand functions, we projected the potential demand for livestock products under the following three scenarios:

Scenario I: Economic growth rates follow the past trend during the period from 1983/84 to 1993/94, except for 0% for the Philippines. Exchange rates are fixed at the 1994 levels.

Scenario II: Economic growth rates are halved, with 0% for the Philippines. Exchange rates are fixed at the 1994 levels.

Scenario III: Economic growth rates are the same as those in Scenario II. Exchange rates are fixed at the March 1998 levels after 1998.

Then we linked estimation results of domestic production of livestock products to a potential demand for feed, i.e., maize. The amount of products was converted to an equivalent of protein contents in this linkage. We handled only maize, because it is the dominant element of feed grains, and the share of maize was in the range of 82-88% in the four countries. The next main component is rice bran or wheat bran which hardly responds to changes in the demand for feed.

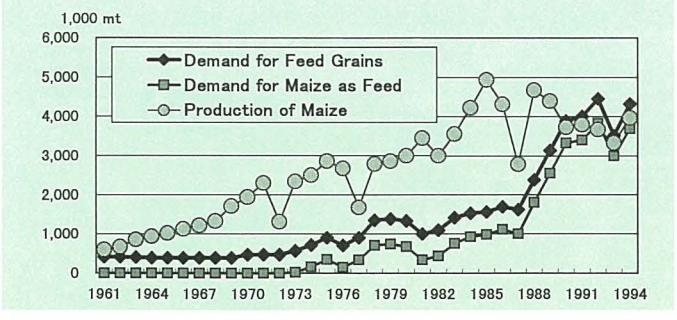


Fig. 1. Balance of feed grains: Thailand.

Table 1. Results of estimation of elasticities of demand

	Thailand	Indonesia	the Philippines	Malaysia
	Income elasticities			
Eggs	0.21	0.58**	1.20**	1.35**
Dairy	0.88**	0.93	1.29	0.75
	Own price elasticities			
Meat	–0.01	–0.08	–0.12	–0.13
Eggs	–0.03		–0.01**	–0.15
Dairy	–0.28	–0.38	–0.32	

Note: ** denotes statistical significance at 1% level.

Some of the preliminary results are summarized in Table 2 and the potential demand for maize forecast for each scenario is as follows:

Scenario I: Malaysia continues to lead in terms of per capita consumption of livestock products. Per capita consumption of meat and eggs in Thailand does not increase appreciably, reflecting the relatively low income elasticities estimated. Sharp increases in meat consumption in the Philippines are generated only by the trend variable, which may lead to an overestimation to some extent. The consumption of maize in these four countries, which is deduced from livestock production, is predicted to increase roughly by 6 million metric tons (mt) from 11.9 million mt in 1994 to 17.9 million mt in 2004.

Scenarios II & III: It is obvious that the increase in consumption of the various livestock products will be lower than that predicted in Scenario I. The difference between the results of Scenario II and those of Scenario III is deduced from the difference in the prices of the products according to the lower exchange rates. We observe that economic growth is the main factor in promoting consumption of livestock products, except in the case of the Philippines where 0% economic growth is assumed. The devaluation of currencies affects more seriously the consumption of dairy products. The total maize consumption is forecast to increase by roughly 4.5 million mt to 17.5 million mt in the year 2004 in Scenario II and by roughly 4.1 million mt to 16.1 million mt in Scenario III.

Table 2. Projections of potential demand for livestock products

	1994	Year 2004		
	Actual	Scenario I	Scenario II	Scenario III
Countries	Per capita consumption of meat (kg)			
Thailand	21.2	24.8	23.1	23.0
Indonesia	9.7	16.7	12.8	11.2
The Philippines	24.8	36.8	36.8	35.1
Malaysia	49.1	69.2	59.4	58.5
	Per capita consumption of eggs (kg)			
Thailand	8.8	11.4	10.6	10.5
Indonesia	3.1	4.0	3.6	3.6
The Philippines	5.3	5.9	5.9	5.9
Malaysia	17.6	26.3	22.3	21.9
	Per capita consumption of dairy products (kg)			
Thailand	21.6	33.8	25.2	21.5
Indonesia	6.6	8.7	7.2	4.0
The Philippines	20.7	33.0	33.0	28.9
Malaysia	59.1	74.3	68.2	68.2

● *International Contribution of Japan and ILRI to World Animal Production Research*

Joint workshop of JIRCAS with International Livestock Research Institute (ILRI) was held on February 13, 1998 in the International Conference Room of JIRCAS.

The main purpose of this workshop was to discuss matters related to the future strategy and orientation of livestock research, as well as to enhance the relations in collaborative research not only between ILRI and JIRCAS but also between ILRI and other Japanese institutes in charge of animal sciences.

Collaborative research between the Tropical Agriculture Research Center (TARC) and former International Laboratory for Research on Animal Diseases (ILRAD) and International Livestock Center for Africa (ILCA) and subsequently between JIRCAS and ILRI covers a history of 18 years. In 1980, TARC initiated a joint study on theileriosis with ILRAD in Kenya. During these 18 years, JIRCAS sent 8 researchers on long-term assignments and 7 short-term visiting scientists.

Japanese researchers dispatched to ILRAD and ILRI had conducted basic research for developing a new vaccine to prevent theileriosis. They obtained excellent results in investigations on the transmission of theileriosis. JIRCAS also sent a researcher to develop statistical methods for evaluating the productivity of milk and meat, and the adaptability of African cattle to their environment.

ILRI is a new institute established in 1995 after the fusion of ILRAD and ILCA among the CGIAR Centers. It has attempted to extend its scope of research activities to Asian developing countries under a new mandate.

This workshop was organized by the Agriculture, Forestry and Fisheries Research Council Secretariat of MAFF, Japan, JIRCAS and ILRI in collaboration with the National Institute of Animal Industry, National Grassland Research Institute and National Institute of Animal Health under the sponsorship of Japan Livestock Technology Association.

The workshop emphasized the importance and significance of the future strategy and orientation of livestock production research in Asian developing countries. Also valuable information was exchanged throughout the discussions, which enabled to deepen mutual understanding and collaborative relations between the Japanese and ILRI scientists toward the 21st century. ***(Eitaro Imaizumi)***

● *Seminar on "No-tillage Cultivation and Future Research Needs" for the New Soybean Project*

JIRCAS has initiated a research collaboration with MERCOSUR countries for a 10-yr (1997-2006) project titled: "Comprehensive Studies on Soybean Improvement, Production and Utilization in South America". For the implementation of the collaboration, Dr. Nobuyoshi Maeno, Director General of JIRCAS visited Brazil, Paraguay and Argentina in March 1998 and signed the Record of Discussions Relating to Research Collaboration with the Ministry of Agriculture and Livestock, Paraguay (MAG) and the National Institute of Agricultural Technology, Argentina (INTA). With the Brazilian Agricultural Corporation (EMBRAPA), this project is the second comprehensive project following the "Agro-Pastoral Project" which has been carried out since 1996.

To commemorate the initiation of the project, the seminar titled "No-tillage Cultivation and Future Research Needs" was held on March 5-6 in Foz do Iguassu, Brazil under the joint organization of JIRCAS and the Centro Tecnologico Agropecuario en Paraguay (CETAPAR-JICA). It was the 1st JIRCAS seminar on soybean research in South America. From 6 countries, 60 scientists participated and exchanged views on the current situation of and future prospects for no-tillage cultivation system as well as on the potential demand and uses of soybean. The proceedings of the seminar will be published by JIRCAS.

(Makie Kokubun)

● *USM-JIRCAS Joint International Conference on "*Acacia *Species-Wood Properties and Utilization" in Malaysia*

The International Conference on "*Acacia* Species-Wood Properties and Utilization" organized by Universiti Sains Malaysia (USM) and JIRCAS was held in Penang, Malaysia during the period March 16-19, 1998.

Fifty scientists from 7 countries, participated in the conference and discussed the current situation of *Acacia mangium* utilization. During the meeting, the need for carrying out further research on the wood properties of *Acacia mangium* and promoting a better utilization of the species was emphasized. Twenty five papers and 6 posters were presented in the 4 sessions. In a post-conference tour, most of the Japanese participants observed a movable sawmill set up in the thinning area of a 11 years *Acacia mangium* plantation in Selangor, Malaysia. ***(Koichi Yamamoto)***

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JIRCAS also organized a workshop on "Water Management and Agriculture in Malaysia" to which representative from relevant organizations in Malaysia were invited during the period March 25-27, 1998.

In addition, delegates from Indonesia, Malaysia, the Philippines and Thailand participated in a workshop on "Aquaculture and Environmental Problems in Southeast Asian Countries" organized by JIRCAS during the period March 26-30, 1998.

During these two workshops' discussions were held to further promote collaborative research activities between some of these organizations and JIRCAS.

Forthcoming Workshop

JIRCAS/IPGRI Joint International Workshop: Cryopreservation of tropical plant germplasm

JIRCAS and International Plant Genetic Resources Institute (IPGRI) are jointly organizing an International Workshop entitled: "Cryopreservation of tropical plant germplasm: Current research progress and applications". This workshop will take place at JIRCAS in Tsukuba, Japan from the 20 to 23 October, 1998.

In the traditional method of conserving the genetic resources of recalcitrant seed species and vegetatively propagated crops, whole plants are maintained in the field. There are, however, several serious problems with field genebanks, including exposure to natural disasters, attacks by pests and pathogens, and high maintenance costs. The Global Plan of Action for the Conservation and Sustainable Utilization of Plant Genetic Resources for Food and Agriculture has identified the development of safe and cost-effective techniques for the long-term conservation of these problem species as a priority research area.

For long-term conservation of problem species, cryopreservation is the only method currently available. Dramatic progress has been made over recent years in the development of new cryopreservation techniques and cryopreservation protocols have been established for over 100 different plant species. However, cryopreservation of tropical and sub-tropical species has been less extensively investigated than that of temperate species.

An increasing number of National Programmes in the tropics are initiating research activities in this area. The workshop will provide a unique opportunity for cryopreservation researchers to gather and meet leading scientists in this field, and to discuss numerous aspects of cryopreservation of tropical plant species. The objectives of the Workshop are:

- To assess the current state of the art, present application of and existing problems with cryopreservation of plant germplasm, with emphasis placed on tropical species
- To identify priority areas for collaborative research, technology development, transfer and application

The tentative program of the workshop which will include oral and poster presentations is as follows:

1 - fundamental aspects of cryopreservation
2 - case studies (cells, embryos, pollen and apices)
3 - applications of cryopreservation in the genebank context
4 - country reports
5 - general discussion

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PEOPLE

Takahiro INOUE, a soil scientist, became Director of JIRCAS's Research Planning and Coordination Division on April 1, 1998, succeeding Dr. Keiji Ohga who became Professor of Tokyo University. Before joining JIRCAS, Dr. Inoue was Director of the Department of Research Planning and Coordination at Kyushu National Agricultural Experiment Station. As a TARC (predecessor of JIRCAS) member, he carried out "Studies on the Increase of Productivity of Upland Soils in Thailand" in collaboration with the researchers of the Department of Agriculture of Thailand from 1980 to 1984.

Kenji MURAKAMI became Director of JIRCAS's Administration Division on April 1, 1998. He was until recently Deputy Director of the Policy Planning Division, Fisheries Agency, Ministry of Agriculture, Forestry and Fisheries (MAFF). He also worked at the Economic Affairs Bureau and Agricultural Structure Improvement Bureau previously.

Tsuguhiro HOSHINO, a wheat and barley breeder, became Director of JIRCAS's Biological Resources Division on April 1, 1998, succeeding Dr. Teruo Ishige who was transferred to MAFF's Research Council Secretariat. During his former assignment at Chugoku National Agricultural Experiment Station, he was head of the Research Planning Section. In 1986 and 1987, he spent two and three months, respectively, at ICARDA as visiting scientist.

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