International Symposium on Technology for Double Cropping of Rice in the Tropics

Sponsored by

Tropical Agriculture Research Center, Ministry of Agriculture, Forestry and Fisheries
(September 30 — October 3, 1986, Tsukuba, Ibaraki, Japan)

The 20th TARC International Symposium, which was held at Tsukuba Center for Institute in Tsukuba, had the theme "Technology for Double Cropping of Rice in the Tropics."

The objectives of the present symposium were to exchange the latest information and experiences on the situation of rice double cropping in the respective countries and regions as well as to discuss main constraints on rice double cropping.

Research scientists from 7 countries, i.e., China, France, Indonesia, Malaysia, Sri Lanka, Thailand and Japan, and from 3 international organizations, i.e., ADB/Philippines, FAO/Bangkok and Rome, and IRRI were invited. Besides the scientists mentioned above, more than 140 participants including JICA trainees gathered at the symposium.

At the symposium 5 country reports and 19 technical reports were presented. The program of the symposium and the speakers are listed below.

Opening Session

Inaugural Address:
Ken-ichi Hayashi
Director General, Tropical Agriculture Research Center

Welcome Address:
Akira Uryu
Deputy Director General, Secretariat of the Agriculture, Forestry and Fisheries Research Council

Keynote Address:
Dato' Syed Ahmad Almahdali
General Manager, Muda Agricultural Develop-

ment Authority, Malaysia

Keynote Address:

Shoichiro Nakagawa

Director General, National Research Institute of Agricultural Engineering

Country Reports

Double Cropping of Rice in Malaysia

Tan Jin Tun

(Muda Irrigation Project II, Rancangan Pengairan Muda, Alor Setar, Malaysia)

Rice Double Cropping, Present Situation and Future Prospects, Major Constraints and Current Research Activities in Indonesia

Soetjipto Partohardjono

(Bogor Research Institute for Food Crops, Bogor, Indonesia)

Double Cropping of Rice in Thailand

Suvit Pushpavesa

(Rice Research Institute, Department of Agriculture, Bangkok, Thailand)

Double Cropping of Rice in China

Tan Zhonghe and Lan Taiyuan

(Sichuan Academy of Agricultural Sciences, Sichuan Province, People's Republic of China)

Double Cropping of Rice in Sri Lanka

Indrajith Balasuriya

(Low Lying Land Rice Research, Department of Agriculture, Matara, Sri Lanka)

Technical Reports

Major Constraints on Rice Double Cropping in Tropical Africa

Dat Van Tran

(Plant Production and Protection Division, FAO, Rome, Italy)

Rice Double Cropping Results in Africa: The Cases of Malagasy Republic, Cameroon and Senegal

Michel A. Arraudeau

(Institut de Recherches Agronomiques Tropicales et des Cultures Vivrieres (IRAT), CIRAD, Paris, France)

Establishment of Mechanized Rice Cultivation System in Egypt

Takayuki Tanaka,[1] Ahmed F. El Sahrigi,[2] Osama Kamel,[3] Seikichi Sugawara,[4] Fatehi El Nemr,[4] Teruhisa Namba,[5] Abd El Kawey El Tanga,[5] Yasuhiro Kimura,[6] Mustafa Abbas,[6] Kimio Miura[7]

1) Formerly Team Leader of Japanese Experts, Rice Mechanization Pilot Project of Egyptian Ministry of Agriculture and JICA, 2) Director of Egyptian Agricultural Mechanization Projects and Agricultural Mechanization Research Institute, Cairo Egypt, 3) Site Manager of the Project, 4) Expert in Mechanization, 5) Expert in Agronomy, 6) Expert in Machinery, 7) Coordinator and Liaison Officer, JICA

Present Situation of Rice Double Cropping in the Muda Irrigation Area, Malaysia

S. Jegatheesan

(Planning and Evaluation Section, Muda Agricultural Development Authority (MADA), Alor Setar, Malaysia)

New Double Cropping System to Overcome the Instability of Rice Production in the Muda Irrigation Area, Malaysia

Michio Nozaki,[1] Nai Kin Ho[2] and Hin Soon Wong[3]

1) TARC, Japan, 2), 3) MADA, Alor Setar, Malaysia

Control of Rice Pests and Diseases in the Muda Irrigation Scheme

Abu Bakar Taib

(MADA, Alor Setar, Malaysia)

Status of Rice Pests and Measures of Control in the Double Cropping Area of the Muda Irrigation Scheme, Malaysia

Jutaro Hirao[1] and Nai Kin Ho[2]

1) TARC, Japan, 2) MADA, Alor Setar, Malaysia

Management of Irrigation Systems for Rice Double Cropping Culture in the Tropical Monsoon Area

Yoshinobu Kitamura

(TARC, Japan)

Water Balance for Rice Double Cropping in the Muda Area, Malaysia

Shigeo Yashima

(TARC, Japan)

Systematized Farm Operations Using Machines for Rice Double Cropping in the Muda Area

Koichi Tanaka,[1] Hiroyuki Shinozaki[2] and Kiat Choon Yeoh[3]

1) Hokkaido National Agricultural Experiment Station, Hokkaido, Japan, 2) Kyushu National

Agricultural Experiment Station, Fukuoka, Japan, 3) MADA, Alor Setar, Malaysia

Hardening of Paddy Field for Mechanization of Harvesting

Hisao Anyoji[1] and S. H. Thavaraj[2]

1) Hokkaido National Agricultural Experiment Station, Hokkaido, Japan, 2) MADA, Alor Setar, Malaysia

Present Status and Problems of Owner Operators in the Muda Area

Hiroshi Nambu[1] and Hin Soon Wong[2]

1) TARC, Japan, 2) MADA, Alor Setar, Malaysia

Irrigation and Agricultural Development: Micro- and Macro-Level Experiences in the Philippines

Masao Kikuchi

(National Research Institute of Agricultural Economics, Tokyo, Japan)

Intensification of Rice Cropping in the Asia-Pacific Region — Problems and Prospects

R. B. Singh

(FAO Regional Office for Asia and the Pacific, Bangkok, Thailand)

Methods of Cultivation for Rice Double Cropping

Soetjipto Partohardjono

(Bogor Research Institute for Food Crops, Bogor, Indonesia)

Reclamation and Development of Rice Cultivation on Coastal Low Lying Lands of Southern and Western Sri Lanka

Indrajith Balasuriya

(Low Lying Lands Rice Research, Department of Agriculture, Matara, Sri Lanka)

Techniques for Achieving High Yield for Double Cropping of Rice

Tan Zhonghe, Fang Wen and Lan Taiyuan

(Sichuan Academy of Agricultural Sciences, Sichuan Province, People's Republic of China)

Selection of Rice Varieties for Double Cropping in Thailand Suvit Pushpavesa

(Rice Research Institute, Department of Agriculture, Bangkok, Thailand)

Development of Rice Varieties Suitable for Double Cropping

G. S. Khush

(Plant Breeding Department, IRRI, The Philippines)

General Discussion

General discussion was co-presided by M. Nozaki (Japan), S. Jegatheesan (Malaysia) and Dat Van Tran (FAO/Rome).

Dr. Nozaki summarized the main topics discussed during the presentations on rice double cropping culture and underscored the following main topics which are most important for improvement of rice cultivation in future, namely the development of irrigation technology for rice double cropping and crop management technology.

At first the discussions were focused on the importance of new irrigation development to promote rice double cropping in the tropics. The major problem was how to expand irrigation for double cropping at the rate required by most of the governments in these regions where both financial and technical resources are scarce. Dr. Perez explained that as the Asian Development Bank's activities irrigation would continue to be a prerequisite for Asian agriculture for rice and other crops to feed the population and earn foreign exchange and that while past activities in the irrigation sub-sector of the bank were centered on the development of large surface irrigation projects, more attention would be given to the development of groundwater resources and command area development through full utilization of the existing irrigation system by improving tertiary canals, extension of command area and proper operation and maintenance of irrigation systems.

From the technological viewpoint, Dr. Dat Van Tran pointed out that the performance of the varieties depending on the ecological conditions, land preparation involving tillage methods, the planting date in relation to the interval between the two crops, water management to improve the efficiency of water use and post-harvest problems should be considered. Dr. Khush mentioned that the future challenges in the field of breeding of new rice varieties were as follows: 1) How to break the present yield ceiling, 2) How to improve the yield as further improvement of the harvest index would be difficult to achieve, 3) Development of rice varieties that are resistant to pests and diseases as well as adverse environments such as flood, drought, etc., 4) Reduction of the growth period of rice from the seedling

stage to maturity to less than 100 days without sacrificing the yield potential, and 5) Importance of the improvement of the grain quality. As for the management of the rice crop, Dr. Soetjipto Partohardjono emphasized the following aspects, 1) Appropriate nursery management, 2) Land preparation, 3) Planting methods including seeding or transplanting, 4) Planting date in relation to the interval between the crops, and 5) Importance of cropping systems whereby a legume crop could be introduced in rotation with rice to improve the soil conditions, particularly the physical properties of soil.

Dr. Singh stressed that technology generation is important but more important is to generate appropriate technology and to see that it gets transferred to and translated at farmers' fields.

During the discussions it was recognized that there are numerous constraints on the successful implementation of rice double cropping in the tropics where the factors responsible for this situation are extremely complex and diverse including the incidence of pests and diseases, occurrence of drought, water shortage, inadequate drainage, flooding, weed infestation, damage associated with high and low temperature, soil problems, salinity, high cost of production, difficulty in the transfer of technology, etc. and that the solution of these problems which are often interrelated requires a systematic and multidisciplinary approach on a long term basis to develop water resources, set up the necessary infrastructure, breed suitable varieties, design farming systems and upgrade technical assistance.

Closing Session

Closing Remarks:

Ryojiro Kishimoto, Chairman of the Symposium Organizing Commitee
Director of Department of Land Improvement, National Research Institute of Agricultural Engineering

Excursion

Foreign participants attended the post-symposium excursion, in which the land consolidation project of Kawachi (Ibaraki Prefecture) and that of Kakurai (Chiba Prefecture) were observed.