

Symposium of Rice Diseases and their Control by Growing Resistant Varieties and Other Measures

September 25 to October 1, 1967 in Tokyo

General food shortage is typical in most countries of Southeast Asia of today. Even the rice export from the former rice exporting countries like Burma and Thailand is decreasing because of the increase in their domestic demand. Accordingly, the production increase of rice in those countries is a grave issue in order to meet the ever increasing demand, and each country is promoting a program of rice production increase. And among major bottlenecks which inhibit the rice production increase the damage from disease is outstanding. So the Symposium at this time adopted the breeding of disease resistant varieties which has been recognized as most effective at present in the control of disease damage. The Symposium has been planned as an integral segment of tropical agriculture research program. It was the very first attempt of its kind by the Ministry of Agriculture and Forestry, and was very successful to achieve its objective of promoting the mutual exchange of informations and to further the understanding among the participants and interested persons under the untiring effort of all participants.

The Symposium was held in Tokyo for 4 days from September 25 to 28, and the experts from 8 countries, Ceylon, India, Indonesia, Malaysia, East Pakistan, the Philippines, Thailand, Taiwan and the International Rice Research Institute have been invited. Japan submitted 10 talking papers. It was regretted that a participant from Cambodia was not able to attend.

The Symposium has taken up bacterial leaf blight, rice blast and *Helminthosporium* leaf spot which are causing the damage at present or deemed as certain to create the problem in future in various countries of Southeast Asia, with respect to various problems on the

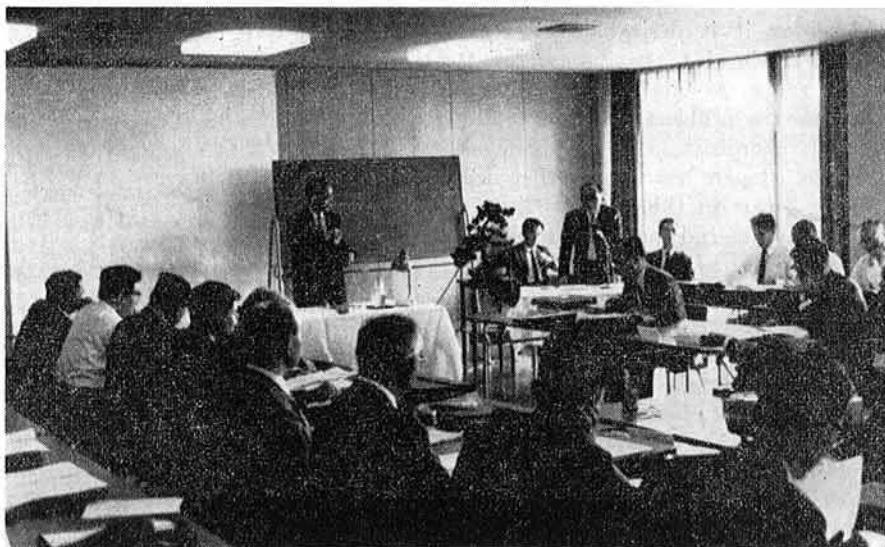
disease damage and breeding of resistant varieties.

Bacterial leaf blight

Ceylon, India, Malaysia and Pakistan have introduced high yielding varieties, Taichung Native 1 and IR-8 to comply with urgent demand to ensure the production increase and rapidly expanded the cultivating acreage. However, all those varieties are easily susceptible to bacterial leaf blight. And because the density of pathogenic bacteria has increased the phenomenon has been invited where the disease outbreak has spread to other varieties on which no major outbreak has been witnessed heretofore. Accordingly, all countries have recognized the importance of this disease, and Japan's research in this field has attracted the attention and very active discussions have been exchanged on the presentation of research findings of Japanese side. However, the causal bacteria of bacterial leaf blight distributed throughout the Southeast Asia differs in race from that of Japan that the need of research coordination mutually among all countries has been keenly felt.

Rice blast

By far, the most damaging rice disease is rice blast and the disease is a great problem through Southeast Asia. Taiwan, the Philippines and Malaysia reported on the breeding of resistant varieties. Here the problem is also the difference in race of causal fungi by countries and by regions it was not possible to find an universal resistant varieties. The Malinja and Mashuri varieties bred in Malaysia have displayed a considerable resistance at first but recently the outbreak of neck blast has spread to large acreage and also infecting



IR-8, that the need of breeding resistant varieties to fungi of different races has again been recognized. Such a situation has already been experienced in Japan and Japanese side introduced the breeding of resistant varieties, testing method of resistance, analysis of resistant genes and the distribution of blast fungi races in Southeast Asia.

Helminthosporium leaf spot

The outbreak of this disease throughout the country has been witnessed in Japan immediately after the end of last war due to accumulated adverse conditions of poor soil condition and lack of fertilizer. In Southeast Asian countries the outbreak is universal at present and it is the disease the control thereof is seriously discussed. Japanese side introduced various research findings on this disease from the standpoint of nutrition physiology, anatomy and patho-chemistry of rice plant. Ceylon reported on meteorological and soil conditions correlated to the outbreak. And Thailand reported the recent research finding that it has been recognized the disease outbreak is related to yellow orange leaf virus.

Other diseases

Various kind of disease damage yet unknown in Japan are distributed throughout Southeast Asia. For instance, among those which are

deemed as virus disease there are Penyakit Merah of Malaysia, yellow orange leaf of Thailand and Tungro of the Philippines besides Mentek of Indonesia the pathogen of which is still unknown. Each country concerned introduced its respective disease and the control thereof was discussed. The International Rice Research Institute introduced the present status and program of breeding resistant varieties at the Institute in view of the defect that IR-8 is easily susceptible to various diseases. Finally, Japanese side introduced the changes in outbreak condition of major rice diseases in postwar period with respect to the changes and correlation of fertilizer-applied volume, cultivation period and cultivation method. Present rice cultivation of Southeast Asia resembles in some respect to that of Japan immediately after the end of war, particularly, interesting is the fact that the damages from disease outbreak are very similar. Accordingly, it is safe to assume that if a high yielding varieties and large fertilizer application technique are to be introduced in rice cultivation to Southeast Asia in future there are many phases in Japan's experience which will serve as reference.

General discussion

In the control of disease damage in Southeast Asia the use of resistant variety has a top

priority. Moreover, it is desirable that this resistant variety maintains the disease resistance in wide range as much as possible. However, because the problem is very difficult, mutual research coordination is necessary as much as possible, Japan has requested a due consideration be given on this phase.

With respect to bacterial leaf blight which will certainly create a problem in Southeast Asia in near future it has been agreed to carry out a detailed investigation of the distribution of pathogenic bacteria under mutual cooperation and to maintain a close coordination by the exchange of research informations along with carrying on the research to promote other control measure. At the end of the Symposium the participant from India presented a very cordial gratitude on behalf of invited experts to the Government of Japan, to the Ministry of Agriculture and Forestry and to the Symposium Secretariat. After the closing of the Symposium inspection trip was made to research institutions of neighboring prefectures for 3 days from September 29 to October 1. All the participants promised to meet again and were off on homeward journey.

Reports and Reporters of the Symposium

Session I Bacterial leaf blight

- 1) Srivastava, D. N. (Pathology) India
Epidemiology of bacterial blight of rice and its control in India.
- 2) Wakimoto, S. (Pathology) Japan
Strain of *Xanthomonas oryzae* collected from Asia and their virulence against rice varieties.
- 3) Yoshimura, S. (Pathology) Japan
Forecasting and control of bacterial leaf blight of rice in Japan.
- 4) Murata, N. (Breeding) Japan
Studies on inheritance of resistance to bacterial leaf blight in rice plant and variation of its causal bacterium.
- 5) Fujii, K. (Breeding) Japan
Progress in breeding of rice varieties for resistance to bacterial leaf blight in Japan.

Session II Rice blast

- 1) Hsieh, S. C. (Breeding) Taiwan
Recent advances in rice breeding for blast resistance in connection with races of the causal fungus.
- 2) Cada, E. (Breeding) Philippines
Breeding of rice for resistance to major diseases, particularly leaf blast in Philippines.
- 3) Hirano, T. (Breeding) Japan
Recent problems in rice breeding for blast resistance in Japan.
- 4) Van, T. K. (Breeding) Malaysia
Rice diseases in Malaysia and the breeding for resistant rice varieties.
- 5) Sakurai, Y. (Pathology) Japan
Field resistance to rice blast, its nature and test.
- 6) Kiyosawa, S. (Breeding) Japan
Genetic analysis on blast resistance of rice plant and pathogenicity of blast fungus.

Session III Helminthosporium leaf spot

- 1) Takahashi, Y. (Breeding) Japan
Nutritional studies on development of Helminthosporium leaf spot.
- 2) Abeygunawardena, D. V. W. (Pathology) Ceylon
Conditions that favor Helminthosporium leaf spot disease and its control in Ceylon.
- 3) Asada, T. (Pathology) Japan
Pathological research on Helminthosporium leaf spot.
- 4) Kanjanasoon, P. (Pathology) Thailand
Varietal differences in Helminthosporium leaf spot and some problems of control measures in Thailand.

Session IV Another Diseases and Breeding of Resistant Varieties

- 1) Alim, A. (Breeding) East Pakistan
Breeding of rice for resistance to major diseases in East Pakistan.
- 2) Beachell, H. M. (Breeding) IRRI
Present status of rice breeding for disease resistance at the International Rice Research Institute.
- 3) Siwi, B. H. (Breeding) Indonesia
Breeding of rice for resistance to major diseases in Indonesia.
- 4) Mizukami, T. (Pathology) Japan
Problems on some other rice diseases in Japan.

Session V Concluding Session