International Symposium on Virus Diseases of Rice and Leguminous Crops in the Tropics

Sponsored by

Tropical Agriculture Research Center, Ministry of Agriculture, Forestry and Fisheries
(October 1-5, 1985, Tsukuba, Ibaraki, Japan)

The 19th International Symposium on "Virus Diseases of Rice and Leguminous Crops" was held at the International Conference Hall of Tsukuba Center for Institutes.

In 1976 the Tropical Agriculture Research Center had organized an International Symposium on "Virus Diseases of Tropical Crops" during which reports on virus diseases of rice, citrus, legume crops, etc. were presented. Thereafter research on virus diseases was actively promoted leading to significant achievements.

The objective of the present symposium was to exchange the latest information on virus diseases affecting rice and leguminous crops, with emphasis placed on the promotion of international research cooperation in this field, in particular in the tropics.

Delegates from Nepal, India, Indonesia, Malaysia, Thailand, the People's Republic of China, CIRAD/France and international agriculture research organizations, including the International Institute of Tropical Agriculture (IITA), International Center for Agricultural Research in the Dry Areas (ICARDA), International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) and International Rice Research Institute (IRRI),

Asian Vegetable Research and Development Center (AVRDC) and Food and Fertilizer Technology Center (FFTC) as well as from Japan participated in the symposium and presented reports on the incidence of virus diseases in various countries along with discussing technical aspects pertaining to research on these diseases.

In the country reports, the delegates from Nepal, India, Indonesia, Malaysia, Thailand, the People's Republic of China and Japan reported on the status of virus diseases in their respective countries. In this regard, the data on the incidence and distribution of virus diseases affecting rice in the People's Republic of China were particularly informative.

Two special reports were presented by Dr. Y. Saito (FFTC) and Dr. D. V. R. Reddy (ICRISAT). Dr. Saito described the progress made in the characterization of the main viruses causing diseases in rice, including their distribution, mode of transmission by vectors, serological detection, etc., while Dr. Reddy outlined the present status of research on the virus diseases affecting groundnut, chickpea and pigeon pea in Asia, and the contribution of ICRISAT to the research.

Thereafter the most recent research developments relating to the major virus diseases of rice and legumes were presented in 21 technical reports grouped in 5 sessions.

The program of the symposium and the names of the speakers are listed below.

Inaugural Address

Kenichi Hayashi
Director General, Tropical Agriculture Research Center

Welcome Address

Kunio Tsuchiya
Research Councillor,
Agriculture, Forestry and Fisheries Research Council Secretariat

Country Reports

Virus Diseases of Rice and Leguminous Crops in Nepal; Status and Future Strategies
Purushottam AMATYA and Hiro Kaji MANANDHAR (Nepal)

Virus Diseases of Rice in India
A. ANJANEYULU (India)

Present Status of Rice and Legume Virus Diseases in Indonesia
Dewa Made TANTERA (Indonesia)

Virus Disease of Rice and Leguminous Crops in Malaysia
Abu KASSIM bin Abu Bakar and HABIBUDDIN bin Hashim (Malaysia)

Virus Diseases of Rice and Leguminous Crops in Thailand
Anong CHANDRASRIKUL, S. DISTHAPORN and K. KITTIPAKORN (Thailand)

Research on Rice Virus Diseases in China
XIE Lian Hui (the People's Republic of China)

Virus Diseases of Rice and Leguminous Crops in Japan
Eishiro SHIKATA (Japan)

Special Reports

Progress and Trend of Research Activities in the Asian Region in Relation to Virus Diseases of Rice
Yasuo SAITO (FFTC, Taiwan)

Virus Disease Problems of Groundnut, Chickpea and Pigeonpea
D. V. R. REDDY, Y. L. NENE and D. McDONALD (ICRISAT, India)

Technical Reports

Pseudo-recombination of RNA Species of Cucumoviruses
Kaoru HANADA (Japan)

Physical and Chemical Properties of Several Plant Viruses
Tada-aki HIBI (Japan)

Soybean Crinkle Leaf and Cowpea Mild Mottle Viruses
Mitsuro IWAKI (Japan)

Soybean Yellow Vein, a New Virus Disease of Soybean
Toshihiro SENBOKU, Kruapan KITTIPAKORN, Surapee KIRATIYA-ANGU, Wanphen SRITHONGCHAI, Pornpod THONGEERKOM and Nualchan DEEMA

(Thailand)

Occurrence of an Unidentified Potyvirus in Soybean in Taiwan

S. K. GREEN, D. R. LEE, H. J. VETTEN and D. E. LESEMANN (AVRDC, Taiwan)

Partial Characterization and Serological Relationships of Three Potyviruses Isolated from Leguminous Crops in Thailand

Tsuneo TSUCHIZAKI (Japan)

Mungbean Yellow Mosaic Virus

Yohachiro HONDA (Japan)

Main Virus Diseases of Peanuts in India and Indonesia

Norio IIZUKA (Japan)

Groundnut Viral Diseases in West Africa

Michel DOLLET, Jean DUBERN, Claude FAUQUET, Jean-Claude THOUVENEL and Andre BOCKELEE-MORVAN (IRHO/CIRAD, France)

Rice Yellow Mottle and African Soybean Dwarf, Newly Discovered Virus Diseases of Economic Importance in West Africa

H. W. ROSSEL (IITA, Nigeria)

Transmission and Some Properties of Rice Gall Dwarf Virus

Tadashi MORINAKA (Japan)

Characteristics of Rice Ragged Stunt in Thailand

Somkid DISTHAPORN (Thailand)

Rice Grassy Stunt Virus

Hiroyuki HIBINO (IRRI, the Philippines)

Rice Tungro Associated Viruses and Their Relations to Host Plants and Vector/Leafhoppers

Hiroyuki HIBINO and Rogelio C. CABUNAGAN (IRRI, the Philippines)

Detection of Rice Viruses in Plant and Individual Insect Vectors by Serological Methods

Toshihiro OMURA (Japan)

Host Range and Serological Properties of Two Potyvirus Isolates from *Phaseolus vulgaris* in Lebanon

K. M. MAKKOUK, D. E. LESEMANN, H. J. VETTEN and D. I. AZZOM (ICARDA, Syria)

Chemical Control of Green Leafhoppers to Prevent Virus Diseases Especially Tungro Disease on Susceptible/Intermediate Rice Cultivars in the Tropics

Osamu MOCHIDA, Salvador L. VALENCIA and Ruperto P. BASILIO (IRRI, the Philippines)

Population Growth Pattern of the Brown Planthopper in Thailand

Masaichi TSURUMACHI (Japan)

Vector Specificity of Leaf and Planthoppers in Rice Virus Transmission

Hitoshi INOUE (Japan)

Utilization of Vector Resistance to Control Tungro Virus Disease and Breeding Strategy to Overcome Outbreaks of New Biotypes in Malaysia

Tadashi TAKITA and HABIBUDDIN bin Hashim (Malaysia)

Breeding for Resistance to Soybean Dwarf Virus (SDV) in Soybeans

Hiroharu BANBA, Yoshimitsu TANIMURA and Isao MATSUKAWA (Japan)

General Discussion

The general discussion was divided into two parts, one dealing with rice virus diseases, with Dr. H. Hibino (IRRI) as the chairman, and the other with legume virus diseases under the chairmanship of Dr. D. V. R. Reddy (ICRISAT) and Dr. H. W. Rossel (IITA).

Dr. Hibino summarized the main topics discussed during the presentations on rice virus diseases and underscored the following aspects: 1) During the 10-year interval between this symposium and the previous one, the characteristics of a large number of rice viruses have been clarified; 2) It can be anticipated that rice virus diseases will become even more important in future with the increase of the cultivation of rice varieties with better eating quality which may not be as resistant as those which are currently being cultivated; 3) Knowledge on the epidemiology of the diseases and vector ecology is still limited; 4) Since the resistance of varieties tends to break down, it remains to be determined whether it is preferable to use varieties resistant to the vector or to the virus; 5) As for the methods of diagnosis of the virus

diseases, the supply of antisera, in particular, is not always adequate.

Based on observations on the incidence of rice stripe virus in Japan, Dr. Kishimoto suggested that surveys on the "population infectivity" namely the proportion of infective vectors in a local population would afford a good index of the status of a virus epidemic.

In the case of tungro, fluctuations in the incidence of the disease which have been recorded in various countries were mainly ascribed to varietal resistance which tends to break down when homogeneous genotypes are introduced over wide areas.

It was also recognized that the dynamics of virus populations is more difficult to trace in viruses characterized by a non persistent type of transmission such as tungro than in those with a persistent type of transmission.

Breeding strategies to develop varieties resistant to the vector or the virus were evaluated during the discussions in relation to the development of new vector biotypes or virus strains.

Finally emphasis was placed on the need for international cooperation for solving the problems relating to rice virus diseases including the production and distribution of antisera.

During the general discussion on the virus diseases of leguminous crops, Dr. V.D. R. Reddy commented on the fact that a large number of viruses occur in the tropics affecting a large variety of legume crops. Therefore the identification and methods of diagnosis of the viruses as well as the control of the diseases are extremely important, in particular data on the epidemiology of the diseases, ecology of the vectors and identification of sources of resistance are essential for the control of the diseases. Also emphasis was placed on the importance of international cooperation for the supply of antisera and diagnostic hosts to enable the identification of the viruses.

In this regard, Dr. Rossel mentioned that in Africa there are three centers acting as service centers. He also underscored the importance of making the best use of sources of resistance and preventing the accidental introduction of infected materials from other regions.

During the discussion it was recognized that among the viruses infecting legumes the nomenclature and identification of the potyviruses were somewhat confusing and required comparative studies on the serological and physico-chemical properties as well as seed transmission of these viruses.

It was suggested that although the creation of a centralized organization for the supply of antisera and diagnostic plants would be extremely useful for the identification of the viruses, plant quarantine regulations prevailing in the respective countries would complicate the realization of such an objective.

Closing Remarks

Toshihiro Kajiwara,
Deputy Director General,
National Agriculture Research Center