Taiwan Agricultural Research Institute
Council of Agriculture

189 Chung-Cheng Road,
Wufeng, Taichung Hsien 41301
Taiwan, ROC

Tel: +886-4-2330-2301
Fax: +886-4-2333-8162
Web site: www.tari.gov.tw

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International Symposium on

Ecological and Environmental Biosafety of Transgenic Plants

December 7- 8, 2006
TARI, Taichung, Taiwancal and

Environmental Biosafety of Transgenic Plants

Proceedings of International Symposium

Edited by

Sheng-Chung Huang
Director
Plant Germplasm Divison
TARI

Shu Chen
Assistant Researcher
Plant Germplasm Divison
TARI

Chien-Yih Lin
Director General
TARI
Council of Agriculture

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Preface

Welcome to the “International Symposium on the Ecological and Environmental Biosafety of Transgenic Plants” hosted by the Taiwan Agricultural Research Institute (TARI) in Wufeng, Taichung County, Taiwan.

The rapid development of biotechnology has brought new concepts and techniques to agricultural research and production that human beings were unable to imagine just a few decades ago. Many new and novel plant varieties have been successfully developed through genetic manipulation; and many of them have already entered commercial production. However, more people are thinking about the impacts that genetically modified organisms (GMOs) might exert on the ecology and environment as more transgenic plants are being commercialized in many countries. The importance of strict biosafety assessments under a well-regulated system is therefore becoming a global issue.

As the people and government of Taiwan recognize the necessity and consequences of this issue, attention has been paid and efforts have been made to ensure the biosafety of GMOs for a long period of time. The Council of Agriculture (COA) and the National Science Council (NSC) of Taiwan took the initiative several years ago of establishing a core facility; and subsequently the new Agricultural Biotechnology Research Center was established within the well-known Taiwan Agricultural Research Institute (TARI) in 2006. The Center is equipped with a main research building, net houses, delicate greenhouses, and isolated trial fields suitable for research on biosafety assessments of transgenic plants. To mark the opening of the Center, TARI has organized the “International Symposium on the Ecological and Environmental Biosafety of Transgenic Plants”, which is being held on December 7 and 8, 2006. More than 120 scientists and experts have been invited to attend, including 14 distinguished speakers from abroad as well as from local organizations and institutions.

The Symposium predominantly focuses on issues related to risk assessment and the ecological and environmental biosafety of transgenic plants. The major topics of the Symposium are: (1) biosafety assessments in principle and practice; (2) the building of facilities and capabilities for biosafety assessment of transgenic plants in field trials; (3) the scientific evaluation of GMOs' potential effects on the ecology and environment; (4) the ecological and environmental risk assessment/management leading to transparent and science-based approaches for regulating transgenic plants; and (5) technical cooperation and information exchanges, in particular on the experiences of how to create a more-transparent environment for regulating GMOs. The proceedings cover all of the scientific papers presented by the invited speakers, which should be of significant value to agricultural scientists dealing with implementation plans for regulating GMOs.

I would like to take this opportunity to express my gratitude to all participants whose attendance contributes to the very success of the Symposium. Special thanks are given to all authors for their prompt preparation of manuscripts and presentation materials. The Symposium and proceedings would not have been possible without the financial support from the Agriculture and Food Agency, COA, NSC, and the excellent assistance of the staff members of TARI.

Chien-Yih Lin, PhD

Director General
Taiwan Agricultural Research Institute
Council of Agriculture

Opening Ceremony

Welcome Address

Dr. Chien-Yih Lin
Director General
Taiwan Agriculture Research Institute
Council of Agriculture

Dr. Lee, Deputy Minister, Council of Agriculture, Dr. Shaw, President, National Chung Hsing University, Dr. Li, the Executive Secretariat, National Science and Technology Program for Agricultural Biotechnology, Dr. Huang, Director General, Agriculture and Food Agency, Dear Honorable Guest, Invited Speakers, Participants, Ladies and Gentlemen:

As the Director General of the Agriculture Research Institute, it is my greatest honor to be the host of this very meaningful symposium. I would like to express my heartiest welcome to all of you attending this International Symposium on Ecological and Environmental Biosafety of Transgenic Plants. I am also grateful to the sponsors including the Council of Agriculture, the National Science Council, and the Agriculture and Food Agency.

The biosafety of the genetically modified organisms is an important issue being concerned with worldwide. In Taiwan, under the guidance and inspection of the Council of Agriculture, the Agriculture Research Institute is the major organization responsible for conducting the biosafety assessment of plant materials. All of the novel crop developed with transgenic technique must pass through the biosafety assessment before being released for commercial purposes. This is why the

Agricultural Biotechnology Research Center with all the necessary facilities, including isolated field and greenhouses, is set up in this Institute. To inaugurate the establishment of the new center and to accentuate our determination in guarding the biosafety of GMOs for the people, as well as to exchange information and practical experiences among scientists from different countries, this international symposium is organized and being held at this moment.

We are honored and pleased to invite 14 distinguished speakers from Canada, Japan, New Zealand, USA, and Taiwan to present their specialties in biosafety assessment. In addition, many experts in biotechnology and agricultural fields participate in this symposium to offer their experiences and expectations to a new and more advanced agricultural production system. On this special occasion, I foresee an opportunity of international cooperation in the continuous development of making GMOs more safe, applicable, and acceptable by not only the people in different countries but also the Mother Nature as well.

Finally, I wish the very success of this international symposium. I also wish to extend my sincerest welcome and blessings to all of you. To our foreign guests, I hope you have a pleasant stay in this lovely and friendly country.

Thank you very much.

Opening Remarks

Dr. Jen-Chyuan Lee
Deputy Minister
Council of Agriculture

Dr. Jei-Fu Shaw, President, National Chung Hsing University, Dr. Gwo-Chen Li, the Executive Secretariat, National Science and Technology Program for Agricultural Biotechnology, Dr. Huang, Director General of the Agriculture and Food Agency, Dr. Lin, Director General of Agricultural Research Institute, Distinguished speakers, Dear participants, Ladies and Gentlemen:

On behalf of the Council of Agriculture, I sincerely welcome all of you attending the "International Symposium on the Ecological and Environmental Biosafety of Transgenic Plants", especially those foreign friends coming from a long way to Taiwan.

The importance of biotechnology has been well recognized worldwide during the past decades. The impacts of its development are revealed in almost every aspect of our life, including the improvement of yield and quality of agricultural products. With a vast investment of manpower and budget into biotechnology, Taiwan has also made significant progresses in promoting the continuous development of agricultural production. For examples, transgenic papaya, rice, potato, broccoli, chrysanthemum, callalily, along with other important crops, have been developed and some are being evaluated in the field for the possibility of commercialization.

Of course, we do concern the possible long-term effects of GMOs on the environment, ecology, and human health as a whole. Therefore, the biosafety of

GMOs has always been an important issue when agricultural scientists are seeking breakthroughs in the technological parts. In a national framework to ensure the biosafety of GMOs, the Council of Agriculture is responsible for the assessment and management of GMOs to avoid any possible adverse effect. The Agricultural Biotechnology Research Center in the Taiwan Agricultural Research Institute will play a very important role in the risk assessment of GMOs before the transgenic plants are allowed to grow in the open fields for research or commercial purpose.

How to initiate and carry on a good program of the biosafety of GMOs is not simple and easy. Although we have already accumulated considerable information and experiences in this field, there are still much more for our agricultural scientists to learn and follow. The establishment of this new Agricultural Biotechnology Research Center is just one step forward; we have to do more to ensure the public the safety of our GMO products. I wish that our scientists will do their bests to build up their capacity in risk assessment of transgenic plants for individual crop within the shortest period of time, and field trials will then be followed. With this aim on mind, the holding of this Symposium becomes more meaningful and important. I deeply believe the outcome of this Symposium will render much help to our efforts in establishing a sound system of biosafety assessment.

Finally, I would like to express my sincere appreciation to Dr. Lin and his colleagues for holding this timely and important International Symposium. I would also like to thank the Organizing Committee for their hard working and excellent arrangements. I believe that this symposium will be a very successful one, and I hope all the participants will have a great time here. To our foreign friends, may you have a very pleasant stay here in Taiwan.

Thank you.

Contribution Papers