EXECUTIVE SUMMARY

SEAMEO SEARCA, being the lead regional and inter-governmental institution for graduate research and education, headed by its Director Ruben L. Villareal, convened this conference-workshop to identify and understand regional needs, priorities, policies, constraints, and status of agricultural biotechnology research and development, especially among SEARCA member countries, and to develop approaches of regional collaborative programs on agricultural biotechnology. This conference-workshop was co-sponsored by the United Nations Food and Agriculture Organization (FAO) and the Asia and Pacific Seed Association (APSA).

Agriculture remains to be a very significant part of the economies of Southeast Asian countries and provides the livelihood of a great number of people. Although the region as a whole has made significant progress in recent years in increasing average capita incomes, rural communities who depend mostly on agriculture remain poor amidst shrinking land, water, and forest resources, declining environmental resources and yield. Thus, any technology that will further increase productivity in agriculture and will conserve environment will be most welcome.

Modern biotechnology is one of the strategic technologies adopted by many Southeast Asian countries which has the potential to contribute significantly to increasing agricultural productivity and sustainability. It has already produced commercial products such as genetically modified (GM) crops (e.g., corn, cotton, soybean, potato) with enhanced agronomic traits such as insect resistance and herbicide tolerance, resulting in higher yield and better quality produce. Hectarage planted to these GM crops increased from 1.7 million ha in 1996 to 39.9 million ha in 1999, with 16 percent of total hectarage found in developing countries.

Concerns

A study of the Southeast Asian regional situation revealed that biosafety guidelines are in place and operational in most of Southeast Asia except in Lao and Cambodia. The ASEAN, through its various committees has developed guidelines to harmonize biosafety regulations for agricultural products derived from biotechnology. The Codex Alimentarius is recognized by WTO members as the reference for food safety. The Codex requires science-based evaluation of biotechnology-derived foods. The Cartagena Protocol on Biosafety, adopted during the fifth conference of the parties to the Convention on Biological Diversity in May 2000, works on the basis of precautionary principle and provides global rules to control transboundary movements, transfer, and handling of GMOs.

Concerns about intellectual property rights (IPRs) and their protection have arisen from the tremendous private sector investment in agricultural biotechnology in the past two decades. Thus, managing agribiotechnology IPR is needed to effectively deal with biotech creations, their distribution and applications, their interaction with industry, and assistance to the biotechnologist. In most Southeast Asian countries, laws which protect IPs, such as copyright, patent, trademark, among others, are in place. However, offices or personnel involved may need to be upgraded as they may not be adequately prepared

to evaluate biotech applications. Efforts to enact Plant Varietal Protection (PVP) laws are underway. However, patenting of life forms except microorganisms is not allowed in most Southeast Asian countries.

Even as adoption of modern biotechnology products increases, concerns regarding their biosafety to human health and environment and safety as food or feed and intellectual property rights are shared by private, government, and civil society sectors. However, since there is no such thing as zero-risk technology, studies on risks associated with biotechnology, those inherent to the technology and those that transcend it, and their management should be carefully conducted.

Agricultural Biotechnology---What Is in It for Developing Countries?

According to private sector perspective, agricultural biotechnology provides:

1) Opportunity to increase production where it is needed, not more production from outside or redistribution of products, by increasing crop yields (e.g., improved tolerance to biotic and abiotic stresses, increased yield stability), and by increasing farm management efficiencies; and

2) Opportunity to improve product quality traits such as higher nutritional quality (e.g., vitamins, protein) and environment-friendly (e.g. uses less chemical pesticides or herbicides, produces less pollutants, biodegradable plastic polymers).

Furthermore, the contention of international agricultural research organizations (IARO) is that agricultural biotechnology can enhance farmer competitiveness for sustained food security and globalization. To assist in this regard, IAROs can:

1) Provide options and advice on various information and technologies (including biotechnology);

2) Provide opportunities to improve national capacity and enhance accessibility to new knowledge and expertise; and

3) Promote partnerships among all stakeholders involved in R&D.

However, an NGO, the Third World Network disagreed on the use of modern biotechnology in agriculture and stated that it is absolutely essential for developing countries to make the right production and consumption choices. It further argued that agro-ecological farming systems can be productive and sustainable.

Agricultural Biotechnology: Status of R&D and Commercialization of Agribiotech Products in Southeast Asian and other Asian Countries

R&D in agricultural biotechnology in Southeast Asian countries are at various stages of development. Field trials of GM crops have been conducted in Thailand (i.e., corn with insect resistance and/or herbicide tolerance, tomato with delayed ripening trait), Philippines (i.e., corn with insect resistance or Bt corn) and Indonesia (Bt corn).

Importation of GM crops for testing in contained facilities and field testing are regulated by plant quarantine and biosafety regulations in individual Southeast Asian countries. Thailand has issued a decree allowing importation of 40 species of GM crops only for experimentation in contained facility or limited field trials but not for commercialization. Allowed as well are processed GM foods and those used in the food, feed, and other industries.

Among countries in Asia and Oceania, China, and Australia have extensive commercial plantings of cotton with insect resistance (Bt cotton), 80,000 ha in Australia in 1998 and 300,000 ha in China in 1999. Only recently, India allowed multilocation field trials of Bt cotton. Japan, on the other hand, has approved GM products (i.e., corn, soybean, potato, cotton) for food and feed since 1997 and has passed labeling guidelines for GM products.

Making Agricultural Biotechnology Work for Developing Countries

Developing countries have faced similar constraints in biotechnology R&D leading to commercialization. These are in the areas of 1) funding, 2) capabilities, both infrastructure and human resources, and 3) public awareness. Whereas Singapore and the Malaysian governments have invested heavily in funding research programs and manpower and infrastructure building in agribiotech since the mid-1980s, other SEA governments have failed in this regard. In addition, the 1997 Asian financial crisis led to cutdowns in R&D investments not only in agribiotech but in other areas as well.

In general, Southeast Asian countries lack biotechnology-trained personnel with only 1-2 persons per 10,000 population compared to 20 in Australia, 40 in the USA and 60 in Japan.

The lack af awareness and understanding of modern biotechnology and its products and the active campaign of those who oppose the use of this new technology are also hampering progress in realizing benefits from this technology.

The challenge, therefore, is for developing countries such as those in Southeast Asia to access and mobilize biotechnology for their national objectives.

Based on the various inputs to the conference-workshop, the following areas of concerns for stakeholders and follow-up activities were highlighted:

1) Greater capacity building to conduct biotechnology R & D. Networking R&D programs such as the Asian Rice Biotechnology Network and the Asian Maize Biotechnology Network and collaborative projects between developing and developed countries significantly contribute to manpower training and effective technology transfer.

2) Promotion of public awareness and understanding of modern biotechnology.

3) Increasing assessment and management studies of risks associated with biotechnology.

4) Promotion of greater public sector investment in agricultural research, in general, and agricultural biotechnology, in particular.

5) Encouragement of private sector investment in biotechnology for developing country agriculture.

6) Promotion of greater official development assistance (ODA) funding for agricultural biotechnology to international agricultural research organizations which provide new information and technologies and training to the national research systems (NARS).

7) Promotion of awareness and training in managing intellectual property rights among researchers, administration officials, and policymakers.

It was emphasized that it is the obligation of technology innovators, producers, and of government to assure the public of the safety of agricultural biotechnology products and their effect on environment. Further, biotechnology, biodiversity, and sustainable agriculture are complementary, synergistic, and interdependent. Contradictions and controversies result from nonscientific and misapplication of biotechnology.