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## ***Workshop Report***

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### BACKGROUND

The Agricultural Biotechnology and Global Interdependence Workshop was made up of a diverse group of people from many cultures and backgrounds. Our goal was to identify the area of international agriculture in which agricultural biotechnology will probably have major impacts and to formulate recommendations to maximize the likelihood that all involved will benefit.

The workshop opened with speakers Richard Sawyer and William Lesser providing commentary on the workshop theme and focal points for the development of specific issues for subsequent discussion.

Richard Sawyer is the founder of the International Potato Center and is now with the International Fund for Agricultural Research. His talk centered around the fact that the global community is a single community with its own problems and scientific advances. The foremost problem we face is feeding an ever-increasing global population. With grain stocks at the lowest levels since 1972 and fish catches decreasing, we are becoming more dependent on land resources. Agricultural biotechnology is a force to help Earth sustain the population. The tools are difficult to develop, and their potential is hindered by the low priority given to agriculture by governments. We in agricultural science have not prepared the global community for the importance of the biotechnology products we are developing which need the support of all. Finally, biotechnology must offer products and services for use by developed and developing countries. And it is essential that we promote these products in a language all scientists and the rest of society can understand.

William Lesser is Acting Executive Director, International Service for the Acquisition of Agri-biotech Applications AmeriCenter (ISAAA). The focus of his talk was intellectual property rights. He noted that the private sector provides two-thirds of the funds for biotechnology research worldwide with many of the products of this research ultimately delivered in seed. The commercial life of these products will be rather brief, so companies will look for broad geographical markets. There is a need to protect intellectual property, and at the same time develop a system for the free-flow of technology and resources. Looking at North-South flows, 35 developing countries do not permit

patents on research on plants and animals, and 70 developing countries are working to enhance intellectual property rights over the next few years. Intellectual property rights are a key issue in accessing technologies from the private sector. The private sector needs to formulate a clear position to developing countries with regard to the choices and consequences of technology transfer. Finally, legislation controlling access to genetic resources is essentially lacking. The laws that come into place should be non-exclusionary. Research access is critical, so it should not be too difficult to get. It is extremely important that we educate society on this subject and decide how to handle intellectual property in the developed and in developing countries.

#### IDENTIFICATION OF PRIORITY ISSUES

After listening to the speakers, the workshop participants were divided into three groups and asked to identify and discuss two issues they felt were key to the workshop. During this discussion time 60 issues were identified by the three breakout groups. These issues covered a wide range of social, political and economic aspects addressing the global interdependence of agricultural biotechnology. Examples of some of these issues are in the appendix (page 143).

Each group then prioritized topics of greatest concern, resulting in the following eight issues being brought forward for discussion by all workshop participants.

#### Equity

Divided into three components:

- Developing countries stand to lose export commodities, an issue to develop.
- Intellectual property rights (IPR).
- Regulatory. A large company can put up with the time, effort and money needed in developing regulations, but a small company may not have the same resources.

#### Institutional Linkage

Including: Gaps that exist between tools developed to where they are applied and utilized; gaps between developed and developing countries; and gap linkages needed between the public and private sector.

#### Biosafety

The U.S. and Europe have biosafety factors in place, but some form is needed in other countries, especially in relation to the use of transgenic plants. Each country needs to have regulatory procedures in place, with some homogeneity between countries.

#### Socioeconomic Studies

Prospective studies are needed to identify the actual and potential impacts of biotechnology products, including social, economic and political, not just the technology dimension. The debate is that many people have difficulty seeing this. It is not a question of producing more, but of having the access.

### Intellectual Property Rights

Evaluate existing and/or new systems of IPR which will maximize access to biotechnologies and generate resources while providing equitable compensation to developers and protectors of these materials. Intellectual property rights are with us for the duration, whether they are popular or not. Systems need to be re-evaluated as more products come into society.

### Negotiated Access

Recognized biotechnology products and process availability are needed in developing countries. Also needed is access to germplasm by developed countries.

### Agenda Setting

Biotechnology products are being developed in the U.S., but we need to know what developing countries need and want. Developed countries need to work with them to this end.

### Communication Between Government and Farmers

Everyone needs to know about biotechnology products. Farmers need to know how to use them effectively to a safe and productive end.

## DEVELOPMENT OF RECOMMENDATIONS

After considerable discussion it was agreed that these issues could be condensed and addressed in three priority issues:

Equity, Rights and Access

Institutional Linkages in Capacity Building

Socioeconomic

The workshop was then asked to divide into three breakout groups, each one to consider one specific issue and, after discussion and debate, bring forward specific recommendations to address that issue. The issues and recommendations of each affinity group were then presented to the entire workshop for discussion and clarification. Finally, a workshop consensus was reached on each issue and recommendation by allowing participants to vote on each recommendation. Twenty-seven participants voted on all recommendations indicating whether they strongly agreed (SA) or strongly disagreed (SD) with that recommendation or found the recommendation acceptable. Numbers in parenthesis indicate those participants who either strongly supported or were against that recommendation.

## RECOMMENDATIONS

### Equity, Rights and Access

To ensure access to new biotechnology products and resources, and to protect equity and intellectual property associated with these technologies, the following recommendations were made:

*Harmonize existing or develop new systems of Intellectual Property Rights (IPR) which will maximize access to biotechnological and genetic resources*

while providing equitable compensation to developers of biotechnology and countries of germplasm origin. (11 SA-1 SD)

*Extreme variation exists in the political and economic status between and among developed countries and developing countries. Therefore, material and intellectual property transfer agreements must now be negotiated on an individual basis between political, academic and industrial institutions. A non-partisan international panel is needed to address grievances derived from such negotiations, (mildly controversial [5 SA-4 SD])*

*As a supplement to such negotiations, multi-country agreements based on existing, successfully operating systems (European Patent Office [EPO], International Union for the Protection of New Varieties of Plants [UPOV]) should be established between groups of developing nations to facilitate handling of IPR. (16 SA-OSD)*

#### Institutional Linkages in Capacity Building

To speed the development of tools of biotechnology, and given the importance of linkages in their transfer, to solve the problems of food and environment globally, the following recommendations were made:

*NABC should:*

- *Broaden its base to include other countries and regions. (17 SA-0 SD)*
- *Gather information on databases regarding biotechnology on an institutional basis and make it available to the membership. (14 SA-1 SD)*
- *Encourage multidisciplinary team-building in the broadest sense. (19 SA-0 SD)*

#### Socioeconomic

To protect the health, safety and economy of producers and consumers the following recommendation was made:

*An ex ante and ex post system, comprised of representatives from public institutions, agribusiness, consumers and producer groups is needed to assess the potential impacts of biotechnology products and processes on:*

- *The environment*
- *Food production and prices as well as consumer acceptability*
- *Wealth distribution*
- *Farmers/labor*

And identify ways to:

- *Reduce negative environmental impacts*
- *Compensate disadvantaged groups*
- *Train agriculturalists in the proper management of biotechnology products/processes. (SA 18-SD 0)*

## APPENDIX

### Workshop Issues

*Who forms the intellectual property policies—scientists, lawyers, politicians, the general population?*

- Identify model legislation based on wide deliberation determining access to natural genetic resources.

- International policy in support of breeders' rights is needed to ensure product development (industry will not target products toward markets that will not provide investment return).

- Bridge building and communication: 1. within programs, 2. between programs, 3. broad-based, and 4. training.

- Develop mechanisms for regional and global cooperation in biotechnology, intellectual property rights (IPR) and biosafety. There is a need for training (i.e., human resource development) between countries to facilitate understanding, biosafety and practical application of recombinant DNA technology.

*Will biotechnology promote global interdependence or dependence of developing countries on developed countries?*

- Funding agencies for international research should coordinate to: 1. establish common research priorities, 2. maximize efficiency of available research resources, and 3. put forward unified rationale for increased research funding.

- The potential benefits vs. possible disruptions of agriculture in developing countries, especially those that rely on one specific crop (also ensuring biodiversity).

- To establish communication mechanisms aimed at improving national, regional, and global cooperation within programs, between programs, and broad-based.

- Coordination of priorities (combined with funding) for product development that will benefit society, but will not return value to developers, is needed. For example, vitamin-enriched grains or legumes would be useful worldwide, but nowhere can value be captured for developers.

- Evaluate existing and/or new systems at IPR which will maximize access to biotechnologies and genetic research while practicing equitable compensation to the developers and producers of these materials.

*How can biosafety be regulated in the developing countries?*

- Rights to use of genes and technologies within developing countries. Can we hold the diversity of agricultural systems which determine a lot of

productivity, diversity of products, and choices of commitments? Can the private sector use its power to choose the topics network and the way in which to rouse them, the access to techniques?

- What should be done to assure that scientists in developing countries gain training in biotechnology and also are able to set research agendas in these areas rather than simply respond to them?

- Establish methods to create communication and understanding of biotechnology in agricultural issues of: 1. the public, 2. policymakers, and 3. developing countries.

- Harmonization agreement for movement of biotechnology products internationally.

*Social and technological innovations: complements and substitutes?*

- Are scientific and/or environmental issues judged for minor consequence in the U.S. (e.g., escape of potentially harmful genes) being appropriately evaluated elsewhere?

- Assess technology transfer from developed nations to the developing countries for improved food products.

- Harmonization of biosafety regulations to help develop biosafety registration guidelines in targeted developing countries.

- Linkages between institutions from tool development to grower fields in the whole global village.

*Who will speak to the public for/about agricultural biotechnology?*

- Commitment: If the private sector is to become a participant in biotechnology/seed research in the developing countries can it be relied upon for continuity, competitive prices, quantity?

- Satisfying concerns of genetically engineered foods (perception). Public awareness and understanding of biotechnology.

- Balance of public vs. private investment—does an increase in public involvement ease the sharing of resources with developing countries?

- The development of guidelines for the protection of property rights and environmental safety.