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Agricultural Biotechnology Support Project (ABSP)

Impact Report

October 1, 1998 - June 30, 1999

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ABSP Annual Impact Report

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INTRODUCTION

This report outlines the accomplishments and impacts of the Agricultural Biotechnology Support Project (ABSP) [DAN-A-00-00126-00] for the period from October 1998 through June 1999. The impacts are listed according to the stated goals of the project as given below.

Primary Goal:

To improve the capacity and policy environment for the use, management, and commercialization of agricultural biotechnology in developing countries and transition economies.

This goal is achieved by meeting the following objectives:

Objective 1

Establishment of a policy framework in developing countries and transition economies which promotes the use, management and commercialization of biotechnology by both host country and multinational agribusiness and research institutions.

Objective 2

Improvement of marketed crops through strategic research partnerships between the US and developing country public and private sectors.

OBJECTIVE 1

The establishment of a policy framework in developing countries and transition economies which promotes the use, management and commercialization of biotechnology by both host country and multinational agribusiness and research institutions.

□ **Biosafety in Indonesia**

Indonesia has been a major focus country for ABSP's capacity building in biosafety and intellectual property rights. There have been several recent developments in the country that illustrate the impact of these activities.

Indonesia's Biosafety Committee has now given deregulated status to 5 transgenic crops (Bt cotton, Bt corn, Roundup Ready cotton, Roundup Ready corn, and Roundup Ready soybean from Monsanto) for unconfined multi-location trials. Later in 1999 they plan to conduct confined field trials of Bt corn from Pioneer Hi-Bred, and other crops are currently being tested in the greenhouse. An application for a confined field trial of ABSP's potato tuber moth resistant Bt potato was submitted to the Indonesian Biosafety Committee and USAID's Biosafety Committee this summer, and a field trial is planned as soon as approvals are granted.

ABSP sponsored two participants, Drs. M. Herman and A. Hidayat, to attend MSU's Food Safety Course in July 1999. They are currently members of the national committee to draft national food safety guidelines and legislation for Indonesia.

□ **Establishment of Technology Transfer Office in Indonesia**

Based on the continued training and assistance from the ABSP project, the Agency of Agricultural Research & Development (AARD) in the Indonesian Ministry of Agriculture has established an Office of Intellectual Property and Technology Transfer (known by the Indonesian acronym KIAT). KIAT was inaugurated by the Indonesian Minister of Agriculture in July 1999 and will serve as the main focal point for management of intellectual properties related to agriculture/biotechnology. It is part of the Indonesian Agricultural Research Organization, a private, non-profit entity. Within 3 months of its operation, KIAT has executed 5 license agreements to commercialize a wide range of technologies developed by the AARD institutions.

According to Dr. Acmad Fagi, Secretary General of the AARD, this office is the direct result of training received in IPR and Technology Transfer at MSU via the short course. Continued collaboration is expected and Dr. Frederic Erbis and Dr. Karim Maredia visited Indonesia from August 29 - September 3, 1999 to provide additional assistance in setting up the office. The office will have legal and financial division, general and business division, technical division, and a secretariat. Ketty Karyati, who has received training as part of ABSP's capacity building efforts with Indonesia, will be the administrator of the office as the secretary. KIAT has expressed interest in running an in-country IPR workshop to educate key scientists and various AARD institutions. In addition, MSU's draft IP policy was shared with KIAT to be used as a basis for developing a system-wide policy in IP.

Dr. Didiek Hadjar from the Estate Crops Research Institute attended the MSU IPR and Technology Transfer Course in 1998. He has since co-founded a new organization called the Indonesian Inventor Society and is serving as President. Again, this organization was developed as a direct result of Dr. Didiek's participation in the course. There have been several biofertilizer/biofungicide technologies patented with the assistance of this organization and are in various stages of commercialization. A copy of the brochures on these technologies is available (in Indonesian).

❑ **Drafting of Plant Variety Protection Legislation in Indonesia**

Indonesia has developed a draft of a Plant Variety Protection, which may be released by the end of 1999.

❑ **Drafting of Plant Variety Protection Legislation in the Philippines**

Ms. Conception Magboo from the Philippines attended the IPR Internship Program at MSU during the summer of 1999. Ms. Magboo is now a member of the team that is drafting the Plant Variety Protection Act in the Philippines. Her participation in the IPR internship program was sponsored by ISNAR.

❑ **Technology Transfer Office in Egypt**

Dr. Magdy Madkour and Dr. Mohamed Eid from Egypt visited MSU in May 1999. They interacted with the MSU Office of Intellectual Property Rights (OIP). Based on the information provided during their visit, Dr. Eid has drafted an Intellectual Property Rights (IPR) policy for the Agricultural Genetic Engineering Research Institute (AGERI). A copy of this policy has been sent to MSU for review and comments, and forwarded to USAID. The IP policy will serve as the basis for the technology transfer program at AGERI and eventually all the agricultural research centers in the Ministry of Agriculture.

❑ **East Africa IPR workshop**

ABSP held a workshop on *The Impact of Intellectual Property Rights on International Trade and Agriculture in East Africa* in Kampala, Uganda from January 18-20, 1999. The Ugandan Council for Science and Technology (UNCST) assisted ABSP in the local organization of the workshop. Additional funds for the support of regional participants to attend the meeting were obtained from the Technical Center for Agricultural and Rural Cooperation (CTA, Netherlands), the Rockefeller foundation and Monsanto. Over 70 participants attended the workshop from Ethiopia, Kenya, Nigeria, Tanzania, Uganda, Zambia, Zimbabwe, Switzerland, United Kingdom, France, United States, Costa Rica, South Africa, and the Netherlands.

Our collaborators in the Uganda Council for Science and Technology have reported the following impacts that they attribute to be a direct result of the IPR Workshop:

- ◆ UNCST interaction with other complementary national institutions handling IPR issues, has tremendously increased.

- ◆ UNCST has also noted an increased interest by the public in IPR matters, particularly the local media.
- ◆ UNCST together with the National Agricultural research Organisation, Ministry of Justice, Forestry Department, NEMA, Makerere University, Uganda Seed Project, Ministry of Agriculture Animal Industry and Fisheries, has embarked on drawing up a Plant Variety Protection Legislation for Uganda.

Dr Barry Greengrass, Vice Secretary-General of UPOV reports that during the workshop he made contact with the responsible persons in Uganda and Tanzania who are now preparing PVP laws. Individuals from these countries have since participated in a two-week course on PVP in Cambridge, United Kingdom, and UPOV are expected to organize national seminars in their countries in January 2000. Valuable contacts were also established Between UPOV and the Commission for Science and Technology of the Organization for African Unity (OAU) in Lagos.

□ **Transgenic Crops approved in Indonesia**

Indonesia's Biosafety Committee has now given deregulated status to 5 transgenic crops (Bt cotton, Bt corn, Roundup Ready cotton, Roundup Ready corn, and Roundup Ready soybean from Monsanto) for unconfined multi-locational trials. Later in 1999 they plan to conduct confined field trial of Bt corn from Pioneer Hi-Bred, and other crops are currently being tested in the greenhouse.

□ **Assessment for privatization of AGERI, Egypt**

In May 1999, an assessment team from the University of California-Berkeley's Haas Business School conducted an assessment on the Commercialization Prospects for the Agricultural Genetic Engineering Research Institute (AGERI) in Egypt. The report, still in draft form, indicated that AGERI could not be self-supporting if USAID/Cairo funds cease as scheduled in 2001. It recommended that privatization plans be slowed down, and that AGERI develop appropriate strategic marketing, resource allocation and business strategies to promote an effective transition to a non-governmental research organization.

OBJECTIVE 2

Improvement of marketed crops through strategic research partnerships between the US and developing country public and private sectors.

□ **Cucurbit field trials**

Breeding of squash, melon and cucumber at Cornell University has been expanded to include resistance to four major viruses, and two fungal diseases. The objective is to bring together as many of these resistances as possible to stabilize yield under less or unprotected conditions in tropical areas. A number of new varieties important in the Middle East and other parts of the world have been obtained, and field trials carried out in Ithaca, NY. Resistant plants and progenies have been selected and controlled pollinations made to advance generations and to cross-resistant plants with these new varieties.

A major impact for 1999 has been the establishment of field trials of materials produced under ABSP Phase I not only in Egypt where they had been targeted, but also in a number of additional locations, and for the first time, we have involved the private sector in these testing efforts. Field trials are now underway or planned for in Jordan (Seminis Vegetable Seeds), Morocco (Novartis), Philippines and Indonesia (sister companies of East West Seed Co.), and are in the process of arranging sites in Turkey (Rijk Zwaan) and Tunisia (Seminis Vegetable Seed). Future trials are planned with collaborators in Jordan, Puerto Rico, Costa Rica, Honduras and Brazil.

□ **Development of a new method for transformation for Cucurbits**

The non-regeneration based electrotransformation system has been tested on cucumber and resulted in successful delivery of DNA (as assessed by PCR) to vegetative tissue of cucumber (ca. 10% of the treated plants). So far this has not resulted in transgenic progeny, but modifications of this method are being investigated.

□ **Potato field trials**

Field trials of the Bt-transgenic potato lines developed at Michigan State University with resistance to potato tuber moth have recently been harvested in Egypt (June 1999). The trials were planted in February, 1999, at the CIP research station and at the Agricultural Genetic Engineering Research Institute (AGERI), with the purpose of obtaining field data toward both agronomic performance and resistance to potato tuber moth (PTM) damage to the foliage and tubers. These trials are now in their third year at AGERI and second year at CIP. Results from this year's field trials were very promising. On average, the percent tuber moth damage was 27 - 28% for the Spunta and Atlantic potato cultivars, whereas the Bt-transgenic lines averaged between 80 - 100% healthy tubers. Other lines showed even greater protection against tuber moth. During the visit strategic linkages were established with the Egyptian private and public sector, seed and commercial growers and information was disseminated regarding the potential commercial use of Bt-transgenic potato lines.

□ **Application for field trials of potato on Indonesia**

An application for confined field trial of ABSP's potato tuber moth resistant Bt potato was submitted to the Indonesian Biosafety Committee and USAID's Biosafety Committee this summer. Indonesia's Biosafety Committee is currently reviewing it, and a field trial is planned as soon as approvals are received.

□ **Impacts of technical training in Indonesia**

Dr. Firdaus Kasim, a maize breeder at the Central Research Institute for Food Crops (CRIFC), was trained by the ABSP project in maize biotechnology at ICI Seeds. He is currently a member of CIMMYT's Asian Maize Biotechnology Network.

OTHER ACHIEVEMENTS AND IMPACTS

ABSP Outreach

AgBiotechNet

AgBiotechNet publishes current information about biotechnology and biosafety for researchers and policy makers worldwide. The site provides rapid and convenient access to research developments in genetic engineering and updates on economic and social issues. The full text content on *AgBiotechNet* has been available to users on the Internet since January 1999. Available content now includes: News updated every 2 weeks, Review articles at least 2 per month), Books (now eight available), Links, Patents, Calendar and Conferences.

CABI *Publishing* has recently developed a relationship with **ISAAA** for inclusion of electronic versions of its *Brief* documents on *AgBiotechNet*. These documents have proved to be some of the most popular on *AgBiotechNet*, with several hundred copies downloaded each month. CABI *Publishing* will be developing this relationship so that more material is added to *AgBiotechNet* in due course.

The average number of user sessions per day since the launch in January 1999 has risen from around 80 in January 1999 to over 200 in June. The average time that each user remains on the site increased from approximately 10 minutes in January-June to approximately 45 minutes in July. *AgBiotechNet* also has a listserv facility which alerts users to new developments e.g. publication of new review articles. The number of registered listserv members has grown to almost 150 since the launch of the service.

Over 95% of CABI's printed subscriber base have registered for access to the web site. This is significantly above industry averages and CABI's previous experience. In addition, approximately 30% of *AgBiotechNet*'s subscribers are located in developing countries. CABI *Publishing* conducted a survey of listserv members in May. Most respondents rated the service as "Excellent" or "Good" and as being of more value than competing services.

ABSP's AgBiotechNet subscribers

As a founding member of *AgBiotechNet* with CABI, ABSP is able to make this service available to its collaborators, free of charge, for the period of the ABSP project (until September 2001). At this point the following institutions have received such subscriptions from ABSP:

- ◆ Uganda National Council for Science and Technology (UNCST), Uganda.
- ◆ Agricultural Genetic Engineering Research Institute (AGERI), Egypt.
- ◆ Ethiopian Agricultural Research Organization (EARO), Ethiopia.
- ◆ ARC-Roodeplaat V.O.P.I, Republic of South Africa.
- ◆ National Bureau of Plant Genetic Resources, India.
- ◆ Kawanda Agricultural Research Institute Library, Uganda.

ABSP Website

In June 1999 the Website of the Agricultural Biotechnology Support Project (<http://www.iaa.msu.edu/absp/>) was chosen as HMS Beagle's "Web Pick of the Day". HMS Beagle is a biweekly 'webzine' for biological and medical researchers, with a daily digest of the highest-quality Web resources and published material. Subsequent to receiving this award the ABSP page was featured on the HMS Beagle home page with a link to our site. It was then listed on Beagle's "Favorite Web Sites" page for 30 days, as well as permanently catalogued in *BioMedLink* (<http://biomedlink.com>), their comprehensive, evaluated database of biological and medical websites.

The Website has been updated and expanded in the last 6 months, and has received considerable attention. On average the site is now receiving between 70 and 90 visitors per week. This increase in traffic is also shown by an increase in the number of inquiries received by ABSP relating to topics on the Website. These inquiries have included:

- ◆ A request from an agricultural company in Kuwait for information on where they could obtain tissue culture plantlets of potato, banana and pineapple in order to set up a tissue culture laboratory. ABSP was able to put the company in touch with our previous collaborator Dr Oscar Arias of Agrobiotecnologia de Costa Rica and a successful linkage was made between the two companies.
- ◆ Dr Nombasa Tsengwa from South Africa 'discovered' ABSP from the Website and subsequently came to visit us at MSU. Dr Tsengwa has recently been appointed as Biotechnology Manager at the Center for Scientific and Industrial Research in South Africa and was very interested in ABSP's approach to biotechnology management and intellectual property rights issues. We have since been able to link Dr Tsengwa to a US consulting company looking to invest in biotechnology in South Africa.

ABSP participation in conferences/workshops

ABSP has participated in several high profile conferences, seminars and workshops. These outreach efforts are an important part of increasing ABSP's visibility within the donor community, government and executive branches, and the general public. They have included:

- ◆ Dr. Catherine Ives was an invited speaker and chairperson at the Lessons without Borders conference in Ames, Iowa March 18-19, 1999. She presented a case study of public/private partnerships in agricultural research.
- ◆ Dr. Catherine Ives was an invited speaker to two meetings of USAID's Board of International Food and Agricultural Development (BOSTID). In February, she discussed "*Public-Private Partnerships: Challenges and Opportunities*." In June, Dr. Ives spoke on "*Capacity Building in IPR for Development of Biotechnology*." These presentations led BOSTID to make a strong statement in support of biotechnology for developing countries, in general, and, in particular, stated that the types of efforts encompassed under ABSP were important keys to the success of adoption of biotechnology by developing countries.
- ◆ Dr. Catherine Ives was an invited speaker at the Association of International Agricultural and Rural Development's (AIARD) Capitol Hill Forum in June 1999. She presented "*Can Biotechnology Reduce World Hunger?*" which was well received. Participants at the seminar included staff of Congressional Members and Committees. Dr. Ives was interviewed by Voice of America after the presentation

- ◆ Dr. Catherine Ives was an invited speaker to a Ford-Rockefeller Foundation Roundtable on March 25, 1999. She gave a brief presentation on the use of biotechnology for developing country agriculture – promises and pitfalls.
- ◆ Dr. Catherine Ives was an invited speaker to Rural Week at the World Bank on March 26, 1999 and gave a presentation to World Bank project managers on “*The Growth of Agricultural Biotechnology and its Implications for Developing Country Agriculture – Promises and Pitfalls.*” The presentation was well received and has led to other invitations from the World Bank to speak at conferences about agricultural biotechnology and its related policies.
- ◆ Dr Andrea Johanson attended the conference “*The Shape of the Coming Agricultural Biotechnology Transformation: Strategic Investment and Policy Approaches from an Economics Perspective*” held at the University of Rome, Tor Vergata June 17-19, 1999. Dr Josette Lewis presented their co-authored paper: “*The Role of Biotechnology Policies and Regulations in Technology Transfer to Developing Countries.*” The paper was very well received as one of the few giving actual examples of technology transfer in agricultural biotechnology to developing countries.

New contacts

ABSP has recently made linkages to other MSU units of expertise in e.g. economics, food laws, grades & standards. This has served to increase ABSP’s linkages to associated issues surrounding the use and commercialization of biotechnology.

- ◆ USAID/Africa Bureau has provided ABSP with \$200,000 to conduct several assessments to identify and prioritize commodities suitable for assistance in grades and standards in production, processing, transport, wholesaling and retailing.
- ◆ ABSP is working with the Department of Agricultural Economics, MSU, to develop an economic analysis of the application of intellectual property rights by public agricultural research institutes in developing countries. The World Intellectual Property Institute has supplied the initial funding for this effort.

Leveraged funding

Additional funds for ABSP activities have been leveraged from several sources:

- ◆ Additional funding for the East Africa IPR workshop was obtained from The Rockefeller Foundation, Monsanto, and the Technical Center for Agricultural and Rural Cooperation (CTA, Netherlands).
- ◆ The Pickle Seed Research Institute (private funding; consortium of producers) has provided additional support toward development of the electrotransformation procedure in Cucurbits.
- ◆ Through contacts with the Institute for International Education (IIE) in Egypt, two graduate students from the Agricultural Genetic Engineering Research Institute (AGERI) have begun Ph.D. programs in the Department of Horticulture, MSU. One of these graduate students will be working directly with Dr. Rebecca Grumet, an ABSP faculty member working on transformation systems in cucurbits.
- ◆ See New Contacts section above for additional leveraged funding.

Linkages & Donor Coordination

Increased linkages and collaborations have been made with the following organizations and donors:

- ◆ **ASARECA** - ABSP has worked closely with UNDP and ISNAR to carry out a biosafety assessment in East and Central Africa for ASARECA (The Association for Strengthening Agricultural Research in Eastern & Central Africa). Follow on proposals to assist ASARECA in developing their priorities and strategies in agricultural biotechnology are now being prepared.
- ◆ **BIO-EARN** - Dr Catherine Ives is a member of the Steering Committee for the East African Regional Programme and Research Network for Biotechnology, Biosafety and Biotechnology Policy Development (BIO-EARN), funded by the Swedish International Development Agency (SAREC) and managed by the Stockholm Environment Institute (SEI). She will work with both BIO-EARN and ASARECA to ensure coordination of their research and policy efforts in biotechnology.
- ◆ **The World Bank** - ABSP has been asked by Indonesia to develop a proposal for World Bank support. This proposal will be part of a new Agricultural Research Management (ARM III) program and will include efforts in technology transfer training, consultations, management, professional development in the management of intellectual property for scientists and administrators. The purpose of the proposal will be to enhance commercialization of research within Indonesia.
- ◆ **ISNAR** – ABSP continues to have a number of links with the International Service for National Agricultural Research (ISNAR). Dr. Catherine Ives continues to be a member of the faculty on ISNAR's Management Training courses, ABSP's biosafety consultant, Dr Pat Traynor has a 1/2 time appointment with ISNAR, and ISNAR and ABSP continue to sponsor participants to each group's workshops and courses.
- ◆ **CIP** - Contacts have been made with the International Potato Center in Peru in order to field test the transgenic potato tuber moth resistant potatoes in other countries.