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***The CGIAR Research Programs:
Gearing Up for New Challenges***

**The Role of Biotechnology in the CGIAR:
A Report on the Highlights of a Stakeholders Consultation**

The CGIAR Chairman convened a biotechnology consultation on April 18, 1997 in Washington, D.C., as part of the preparations for the discussion of biotechnology issues at MTM97. CGIAR stakeholders, partners, and the international scientific community were represented. The attached note presents the background to and the highlights of that consultation. It is background for discussion of Agenda Item 5 - Biotechnology in the CGIAR.

**The Role of Biotechnology in the CGIAR:
A Report on the Highlights of a Stakeholders Consultation**

Background

A major concern has been expressed about the capacity of the CGIAR to serve as a link between advanced research institutions including those of the private sector at the vanguard of research in agricultural biotechnology, and the national agricultural research

systems whose efforts directly benefit poor farmers and consumers in the South. Biotechnology has evolved to be a powerful and critical tool in research to increase agricultural productivity and enhance natural resource management. The CGIAR has not only kept a watchful eye on the development in the biotechnology research arena but has also actually been a participant in the development and utilization of biotechnology techniques and products. The extent to which it has been involved relative to what is necessary is one of the major questions being asked.

A consultation on the role of biotechnology in the CGIAR was convened by the CGIAR Chairman on April 18, 1997. The primary objective was to review the state-of-the-art in biotechnology research both within and outside the CGIAR System, and to discuss the needs and opportunities for CGIAR investments in this field. A number of important issues concerning biotechnology were raised and discussed. Participants in the consultation were CGIAR stakeholders composed of the chairs of various CGIAR committees, and representatives from the private sector, NGOs, NARS, member organizations and scientists involved with biotechnology research work. The list of participants is attached.

Biotechnology Research in the CGIAR

Biotechnology research efforts in the CGIAR were initiated in the mid-70's by two centers, CIP and ILRAD (now ILRI). Today, twelve centers are engaged in various research activities involving the use of biotechnology techniques. The centers' laboratories vary in terms of the types of biotechnology techniques being employed, i.e. from the relatively simple cell or tissue culture to the more complex methods aimed at developing transgenic plants.

The main areas of the centers' biotechnology work are in crop disease diagnosis/detection, crop improvement, germplasm storage and exchange, crop propagation, improvement of microorganisms, livestock disease detection and treatment, embryo storage and exchange, and livestock improvement.

Biotechnology research funding in the centers represents a small fraction of the total funding for the CGIAR research agenda. From a survey of the centers conducted by the CGIAR Private Sector Committee, the centers' expenditures for biotechnology research reached \$22.4 million (\$10 million of which was by ILRI) in 1995. This was double the amount spent in 1993 and accounted for about 7% of the total CGIAR research funding. (Some centers have pointed out that their current spending is more than what was indicated by the 1995 survey. However, there appears to be a consensus that total system's funding for biotechnology research work remains under \$25 million). The amount may represent a significant share of the total public sector funding (estimated at \$50 million) of biotechnology research work in the developing countries. This is, however, miniscule compared to the estimated \$2.5 billion per year investments by public and private sector institutions in agri-biotechnology research programs in industrialized countries. The private sector investment, in particular, has been increasing at a rapid rate.

Issues Raised and Stakeholders' Responses

The consultation was a freewheeling discussion of a number of issues pertinent to biotechnology in the CGIAR. The key questions and corresponding responses are summarized below.

- What is the place of biotechnology in the CGIAR in the context of carrying out its mission of "contributing to sustainable agriculture for food security in developing countries"?

There was broad recognition of the potential of biotechnology in accelerating agricultural transformation in developing countries. Most of the current agri-biotechnology applications in industrialized countries are similarly needed in developing countries. Such applications as molecular mapping,

gene promoters and transformation techniques, to name a few, are useful tools in crop improvement work. However, little attention is given by the largest investors in biotechnology research work that addresses the research priorities of developing countries. The products or technologies developed in the North are not tailored to address the specific needs in the South, i.e. in terms of plant or animal species, types of production constraints (insect pests, diseases, abiotic stresses), etc. Therefore, there is a widening gap in the applications of biotechnology between rich and poor countries, a technological gap that may create greater social and economic inequalities globally, regionally, and nationally.

Consistent with its mission, CGIAR should play a key role in reducing this gap. Biotechnology is a powerful tool that would enable the CGIAR to enhance greatly its capacity to contribute to a more rapid and sustainable agricultural growth in developing countries.

- Through what modalities should an expanded program in biotechnology research in the CGIAR be carried out?

As pointed out earlier, the levels of agri-biotechnology research investments in the developing world are nowhere near those in the developed countries. The private sector investments alone in developed countries are multiples of the current levels of investment that the public sector, including the CGIAR, is able to make in developing countries. The CGIAR should strive to increase its in-house capacity for biotechnology research, to ensure that the system has the research teams with the necessary wherewithal to effectively carry out their work. In parallel, it should also find ways to construct new, substantial, and equitable partnerships with advanced research institutions and private sector. Such partnerships will be defined by the complementary capacities of potential partners.

Apart from building the system as a research base and a platform for collaboration in biotechnology, the CGIAR could also serve as a system of knowledge nodes where the most important and relevant technological advances are brought together, adapted, and disseminated for the benefit of the poor.

The indications from the NARS on the issue are encouraging. The diversity of the NARS in many aspects (priorities, capacities for biotechnology research, etc.) is, of course, fully recognized. Some of the NARS institutions have developed some level of capacity for biotechnology research and are already collaborating with some centers and other partners. Many others, however, need assistance either in developing their capacity or in accessing biotechnology products.

- What level of investment is necessary?

Participants recognized the need to increase the amount of support to a level that is multiple of the present funding. Clearly, there are gaps that need to be filled. The types of biotechnology work that need to be expanded have to be identified. The centers' research plans (MTPs) for 1998-2000 might not have adequately reflected the needs in terms of a more responsive biotechnology research agenda and the required resources to support it. This, according to some of the centers, does not imply a "constrained vision" but is seen more as a result of financial prudence.

The consultation made it clear that increasing CGIAR's investments in biotechnology research is not a reallocation of current resources. It is based on

a firm understanding that they will be additional to the support currently provided to the agreed agenda. The increased investments should not detract the centers from the other important work that they need to do.

- How should CGIAR address intellectual property rights (IPR) and biosafety issues?

Any discussion of biotechnology invariably brings up a concomitant set of issues, i.e. biosafety and intellectual property rights (IPR) issues. Biosafety is important from the standpoint of risks prevention and public acceptance of the products of biotechnology. This was, among other things, reiterated by the NGO constituency particularly with regard to transgenic plants. IPR issues are of major concern with respect to maintaining the free exchange of germplasm and ensuring access to biotechnology products and techniques for the benefit of developing countries.

The extensive consultations and discussions conducted by previous CGIAR panels (BIOTASK in 1991 and Swaminathan's panel on IPR in 1994) have led to the development of an interim set of working guidelines on IPR that will be reviewed and revised to take into account changes occurring in various fora. Further discussions of the issues were held at a workshop on "Ethics and Equity in Conservation and Use of Genetic Resources for Food Security" organized by the Genetic Resources Policy Committee whose report will be available in Cairo. These issues will inevitably come more into focus as the system increases its efforts to expand research partnerships between the centers and their collaborators in biotechnology.

Overall, the consultation conveyed the following messages:

- recognizing the potentials of biotechnology as an added tool, the CGIAR should proceed with efforts to enhance its capacity for biotechnology research with a special emphasis on such technologies as molecular markers and a strong link to breeding, farm systems at the smallholder level and ecological considerations,
- investment in biotechnology research will need to be increased by a significant amount, a multiple of the current allocation,
- stronger partnerships and collaboration are required within the CGIAR System as well as between CGIAR centers and others engaged in biotechnology research,
- the CGIAR should position itself to ensure that advances in biotechnology can be harnessed for the benefit of the poor and for the protection of the environment; it should vigorously promote public awareness of the context in which biotechnology research programs are carried out.

Consultation on the Role of Biotechnology in the CGIAR

Date / Time: April 18, 1997 / 4:30 p.m. - 7:00 p.m.

Venue: Room S 7013, The World Bank 'S' Building
1750 Pennsylvania Ave., N.W., Washington, D.C.

List of Participants

Chair: Ismail Serageldin
Chairman, CGIAR

Center Directors: Hubert Zandstra
Chair, Center Directors Committee
and Director General, CIP

Tim Reeves
Director General, CIMMYT

**Center Board
Chairs:** Wanda Collins
Chair, Center Board Chairs Committee

**Technical Advisory
Committee:** Donald Winkelmann
Chair, Technical Advisory Committee

**Private Sector
Committee:** Bernard Auxenfans
Member, Private Sector Committee
Vice President, Monsanto Company

Sam Dryden
Member, Private Sector Committee
Managing Director, Big Stone Partners

**Non-Governmental
Organization:** Michael Hansen
Research Associate
Consumers Policy Institute / Consumers Union

Genetic Resources

Policy Committee: **Geoffrey Hawtin**
Member, Genetic Resources Policy Committee
and Director General, IPGRI

Bo Bengtsson
Member, GRPC

**Member
Organizations:**

Alex McCalla
Director, Agriculture and Natural Resources Dept.
The World Bank

Judith Chambers
Senior Biotechnology Specialist
USAID

Gary Toenniessen
Deputy Director, Agricultural Sciences
Rockefeller Foundation

National Agricultural

Research Systems: **Marcio de Miranda Santos**
Head, Department of Research and Development
EMBRAPA, Brazil

**Scientists:
Netherlands**

Rudy Rabbinge
Member, Scientific Council for Government Policy, The
and Chair, Board of Trustees, IRRI

Fred Gould
Member, The World Bank Panel On Transgenic Crops
and Professor, North Carolina State University

Finance Committee:

Michel Petit
Chairman, Finance Committee
and Director, Agricultural Research Group (ESDAR)
The World Bank

CGIAR Secretariat: **Alexander von der Osten**
Executive Secretary

Manuel M. Lantin
Science Adviser

Ernest Corea
Senior Information Officer