Seeding Solutions
Crucible Project

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Potatoes, soybeans, corn, rice, and tomatoes — these staple foods have been enjoyed for centuries, around the world. Recently, however, varieties of some of these and other crops have spurred violent demonstrations, been banned from supermarket shelves in Europe, and led to threats of trade wars.

BY BRIAN DAVY AND MICHELLE HIBLER

At the root of the problem is modern biotechnology that has enabled the development of genetically modified organisms (GMOs). These organisms have profoundly changed our conception of agriculture — and of life more generally — as new, profitable uses for living materials have created incentives for people to think of this material as a resource. "For better or worse," says Michael Halewood, Legal Specialist and Associate Scientist at the Rome-based International Plant Genetic Resources Institute (IPGRI) and coordinator of the Crucible Group, which was hosted by Canada's International Development Research Centre in Ottawa, "we've come to talk about genes as resources in the same way we talk about gas or water or electricity in terms of building blocks for the creation of commercially saleable goods."

Intellectual property (IP) laws are one means by which people can gain control over who gets to use those resources and under what circumstances. This explains the high profile of intellectual property rights in the rapidly growing public discourse regarding the use of genetic resources in plant breeding and biotechnology generally. "There's a scramble internationally to see who owns what genes and under what circumstances," explains Halewood. "People are struggling because IP law is not always clear."

The stakes are high. An estimated 40 percent of the world’s economy, for instance, is based on biological products and processes. And according to the International Seed Trade Federation, the world market for genetically engineered seeds alone is expected to have reached US $2 billion in 2000. It is predicted to triple to US $6 billion in 2005, and soar to $20 billion in 2010. By one estimate, the ability to identify and use genetic material doubles every 12 to 24 months.

The struggle for genetic resources

Consumer concerns about genetically modified organisms centre on potential risks to human health and the environment. But the issue is much broader and far more complex. As IPGRI’s Susan Bragdon and David Downes point out in a paper published in Issues in Genetic Resources, "advances in technology are taking place at a rate far faster than social policies can be devised to guide them, or legal systems can evolve to address them." Decision-makers trying to develop good, coherent, consistent policy on genetic resources are faced with a multitude of interconnected issues. Even discerning which are relevant to conserving and managing these resources, and integrating them into policy, is extremely difficult.

A fundamental area of dispute is who should share the benefits derived from the exploitation of genetic resources and biotechnology. "A number of parties are 'squaring off' over the question," says Halewood. "The lines are usually drawn between developed and developing countries and, within countries, between local communities — usually rural and indigenous peoples and their better-off, more powerful compatriots."

The concerns are numerous. Some people, for example, consider that the expanded scope of intellectual property rights (IPR) and their extension to biological materials enable institutions and researchers to appropriate and limit access to, without compensation or consent, the resources and knowledge of farmers and indigenous communities, especially in the developing world. Others point to the practices of multinational seed companies that are developing, implementing, and promoting a variety of technological tools to restrict the right of farmers to save and re-use seeds from their harvests. This is taking place against a backdrop of accelerating loss of biological diversity as forests are felled for timber or to make way for agriculture, of fisheries collapse, and of an increasing number of plant and animal species facing extinction.

The already complex issues of intellectual property and biodiversity are further complicated by the larger trends of globalization and privatization. And amid the process of globalization, new rules and actors are
changing governance structures. For instance, multilateral rule-making in a global marketplace is influencing the role of the nation state. Intellectual property rights are a case in point. Not long ago, the term IPR was scarcely heard outside of a small circle of inventors, government bureaucrats, and patent lawyers. However, since the inclusion of IP rights in the Trade-Related Aspects of Intellectual Property Rights (TRIPS) section of the General Agreement on Tariffs and Trade (GATT, now the World Trade Organization, WTO), they are widely discussed in the context of international trade, agriculture, and development (see box, "A decade of efforts"). The WTO–TRIPS agreement requires all signatories to implement IPR protection for a range of biologically based material that they had not previously been obliged to protect. To this end, signatories to the WTO have forfeited their independence to adopt or reject a number of legal standards in their national laws.

"The globalization of intellectual property laws through international trade agreements such as TRIPS and NAFTA has contributed to developed countries reaping the lion's share of the benefits derived from the exploitation of genetic resources," explains Halewood. Many also argue that the TRIPS clause fails to protect the biodiversity of developing countries. Moreover, existing international and copyright rules that cover modern inventions and ideas do little to protect the rights of informal innovators over their genetic resources and knowledge, which is being exploited for profit by others. This is so, despite the fact that these innovations are increasingly recognized to be crucial in understanding, using, and conserving biological diversity.

**Untangling the issues: the Crucible Project**

These are some of the issues debated by members of the first Crucible Group, a multinational, multidisciplinary gathering of experts who met, first in Rome in 1993, then in Uppsala and Bern, to examine questions of genetic resources control and management (see box, "The Crucible Groups"). The group—28 individuals from 19 countries—included grassroots organizers working with small-scale or subsistence farmers, trade diplomats, agricultural research scientists, science managers, intellectual property specialists, and agricultural policy analysts from both North and South. The private and public sectors, as well as civil society, were represented.

The Crucible Group was particularly concerned about the loss of biodiversity of farmers' varieties and its possible impact on food security for the world's poor, who rely on biological products for close to 90 percent of their food, fuel, medicine, shelter, transportation, and other needs. For example, more than 1.4 billion rural people—most of them poor farmers—depend on farm-saved seeds and local plant breeding and selection as their primary seed source.

While Crucible Group members held vastly differing views on many controversial issues, they shared a concern for the conservation and enhancement of plant genetic resources and an alarm that decisions were being taken or policies adopted that could imperil the availability of plant genetic resources for world food security and for agricultural development. In an effort to clarify the issues, the Crucible Group agreed to debate the most contentious points among themselves and to prepare a nonconsensus report that would set forth the best arguments of every side.

Following months of email and face-to-face debate, the group identified 10 areas where no agreement was possible, but where they could offer distinct viewpoints that might help others. Most of these issues involved intellectual property related to living organisms, the role of the Consultative Group on International Agricultural Research (CGIAR), and the future structure of an international genetic resources conservation and exchange system.

Somewhat to its surprise, however, the group was able to identify 28 recommendations members felt able to offer collectively to policy-
The Crucible Groups

In 1993, after the UN Conference on Environment and Development and before finalization of the General Agreement on Tariffs and Trade Uruguay Round of Multilateral Trade Negotiations, a group of 28 individuals from 19 countries met, first in Rome, then in Uppsala and Bern, to debate the most contentious points about the conservation and enhancement of plant genetic resources. Dubbed the "Crucible Group," the project was funded by the Australian Centre for International Agricultural Research, Australia; the Directorate General for International Cooperation, Netherlands; the International Development Research Centre (IDRC), Canada; the Swedish Agency for Research Cooperation with Developing Countries, Sweden; and the Swiss Development Corporation, Switzerland. The International Plant Genetics Resources Institute (IPGRI) and the Rural Advancement Foundation International (RAFI, Canada) were partner organizations.

In 1998, many of the same people found themselves together again in Uppsala, revisiting the same unresolved issues. They agreed on the need to convene "Crucible II" to try to advance the international agenda for genetic resources. The Crucible II Group was made up of a wide range of individuals — more than 45 participants from 25 countries — who passionately and respectfully disagreed on intellectual property, the rights of farmers, the mechanisms for benefit-sharing, and the appropriate structures for conservation.

Crucible II Group was supported by the German Federal Ministry for Economic Cooperation and Development/German Technical Cooperation, Germany; the Canadian International Development Agency, Canada; the Dag Hammarskjöld Foundation, Sweden; IDRC, Canada; the Swiss Agency for Development and Cooperation, Switzerland; and the Swedish International Development Cooperation Agency, Sweden. Partners were IPGRI and RAFI. The Crucible II Group was hosted by IDRC.

In addition to ongoing communications via the Internet and by email, by the end of the second Crucible round in 2000, the group had met in Uppsala under the auspices of the Dag Hammarskjöld Foundation and at large working meetings held in Ottawa, hosted by IDRC; Nairobi, hosted by the African Centre for Technology Studies; and Rome, hosted by the International Plant Genetic Resources Institute.

decision-makers. The summary of their deliberations and the recommendations was published by IDRC in 1994 under the title People, Plants, and Patents: The Impact of Intellectual Property on Trade, Plant Biodiversity, and Rural Society (see box, "Resources").

The second Crucible round

In 1998, many of the original Crucible Group members met again in Uppsala to revisit many of the same unresolved issues and consider a number of new ones. They agreed on a need to convene a second Crucible Group round of meetings to try to move the international agenda for genetic resources further. Like the original group, the second Crucible Group distinguished itself from other research initiatives in the field by its informal, multistakeholder, nonconsensus modality. As a neutral forum, Crucible II Group promoted open discussion between participants who would otherwise perhaps never sit at the same table.

For 2 years, the group debated differing approaches to the use and ownership of genes, trade in biological resources, preservation of biological diversity, indigenous peoples' rights, and international food security. The group had two goals. The first was to review the most significant developments with respect to genetic resources in the 5 years since Crucible I. Even agreeing on what is relevant in this context turned out to be a challenge. So too was attempting to forge agreement on the significance of those developments. In the end, the group agreed on 15 key recommendations regarding genetic resource policy issues (see box "The Crucible Group Recommends ..."). These are presented in Seeding Solutions, Volume 1: Policy Options for Genetic Resources, launched in May 2000.

Legal approaches to three broad issues

The group's second task was to identify and critically assess the range of practical legal policy options open to national policymakers. It identified three contentious, outstanding policy issues:

- the need to ensure the most open and equitable possible flow of genetic resources between farmers, and other rural people, and researchers;
- the need to protect, promote, and conserve the knowledge of
indigenous and local communities in ways that ensure their full participation in germplasm conservation and enhancement; and

- the need to encourage innovative research on genetic resources for the benefit of present and future generations.

For each of these issues the Crucible Group provided a "menu" of legislative and policy options. These menus constitute the largest part of Seeding Solutions, Volume 2: Options for National Laws Governing Control Over Genetic Resources and Biological Innovations, launched in November 2001. Four collections of optional legislative provisions are presented in this volume, concerning access law; sui generis intellectual property protections for indigenous and local knowledge, as well as those for plant varieties; and intellectual property protections for biological innovations.

As the Crucible Group points out, this volume does not provide answers. Instead, it offers a range of technical legal options that national policymakers can use to inform their own thinking about how to address issues. Many of the options have been selected because they are controversial. Of all the legal approaches identified, the Group focuses most closely on the analysis of bilaterally oriented domestic access and intellectual property laws because, while they have been the subject of much controversy, there has been little progress in public discourse on their ultimate utility and technical feasibility.

"At the end of the day," says Halewood, "we know we haven't 'solved' the problems facing national policymakers regarding domestic access and intellectual property laws." However, by charting the range of options available and annotating them with criticisms from the different perspectives within the group, "we hope to facilitate the continuing debate." In doing so, Seeding Solutions also demonstrates that most of the laws and legal principles now available to policymakers are ill-suited to the goals of maximizing access, exchange, and innovative uses of genetic resources.

The second Crucible round, like the one before it, met and in some ways surpassed the expectations originally set for it. Both rounds established that valuable consensus is possible, even in a group representing radically diverse perspectives. One of the unintended benefits is that the project has created a very strong network of experts from an extraordinarily broad range of views on genetic resource policies. The network endures and some participants are continuing to enjoy its fruits on an ad hoc basis.

The Crucible II Group Recommends ...

1. Broadening participation and partnership in agricultural research and genetic resource conservation.
2. Supporting in situ or on-farm conservation by farming communities themselves.
3. Supporting farmer-led science and participatory plant breeding, in partnership with formal research and development efforts.
4. Providing and enforcing antitrust legislation to ensure fair competition in the seed industry.
5. Protecting human genetic diversity by governing, monitoring, and reviewing all aspects of the conservation and use of human genetic diversity.
6. Banning Genetic Use Restriction Technology in released varieties where its primary purpose is to prevent seed-saving by resource-poor farmers.
7. Ensuring effective participation in — and policy harmonization among — intergovernmental forums and establishing effective consultations with all stakeholders.
8. Balancing trade and environment treaty obligations and ensuring that long-term security of genetic resources for food and agriculture is not undermined by the implementation of other treaties.
9. Finalizing a new International Undertaking on Plant Genetic Resources for Food and Agriculture (IUPGR) and making it legally binding on signatories.
10. Implementing the Global Plan of Action adopted in 1996 as a mechanism for equitable benefit-sharing within a multilateral system of access and exchange.
11. Ensuring the security of the international gene banks developed by the CGIAR by bringing them under the aegis of the Conference of Parties of the IUPGR.
12. Making germplasm flows transparent by ensuring that germplasm and variety databases are compatible and accessible to all stakeholders.
13. Recognizing and protecting the rights of indigenous peoples and local communities to genetic resources and traditional knowledge and practices about them.
14. Appointing and supporting an intellectual property ombudsman to address a wide range of concerns, particularly those of indigenous and rural communities.
15. Taking full advantage of the opportunities and flexibility in the TRIPS chapter of the WTO Agreement, exercising national sovereignty, and developing appropriate legislative tools to advance agricultural development in developing countries.
Resources

From the Crucible Group

• Seeding Solutions, Volume 1: Policy Options for Genetic Resources (People, Plants, and Patents Revisited), by the Crucible II Group. Copublished by the International Development Research Centre, the International Plant Genetic Resources Institute, and the Dag Hammarskjöld Foundation, 2000.
• Seeding Solutions, Volume 2: Options for National Laws Governing Control Over Genetic Resources and Biological Innovations, by the Crucible II Group. Copublished by the International Development Research Centre, the International Plant Genetic Resources Institute, and the Dag Hammarskjöld Foundation, 2001.

These publications may be purchased and consulted on the IDRC Web site at www.idrc.ca/booktique.

Further reading

• “Recent policy trends and developments related to the conservation, use and development of genetic resources,” Susan Bragdon and David Downes, in Issues in Genetic Resources, No.7, June 1998. International Plant Genetic Resources Institute, Rome, Italy.
• “Saving the blueprints: the international legal regime for plant resources,” David S. Tilford, in Case Western Reserve Journal of International Law, Spring/Summer 98, Vol. 30, Issue 2/3, Case Western University School of Law, Cleveland, USA.

See also ...

• Commission on Genetic Resources for Food and Agriculture: www.fao.org/ag/cgrfa
• Conference of the Parties to the Convention on Biological Diversity: www.biodiv.org
• International Plant Genetic Resources Institute: www.ipgri.cgiar.org
• System-wide Information Network for Genetic Resources, CGIAR: www.singer.cgiar.org
• The World Conservation Union: www.iucn.org
• World Intellectual Property Organization: www.wipo.org

Essential Information

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