

Biotechnology

& Global Development Challenges

This document sets forth principles that will guide and inform Winrock International's work as it relates to biotechnology.



BIOTECHNOLOGY AND WINROCK'S MISSION

Winrock works with partners in the United States and 40 countries, usually in rural areas, to increase economic opportunity and promote practices that sustain natural resources and protect the environment. We work in agriculture, forestry, environmental management, clean and renewable energy, and leadership development. In all our activities, we offer knowledge - about technologies, about institutions, about policies, and about leadership. That knowledge, borne by staff deeply committed to serving others, is the tool people need to help themselves.

We live at a time when the Earth is in rapid transition, a time in which we must, within just a few decades, accommodate the needs of an additional two to three billion people while acting to preserve the planet's natural capital assets - our land, air, water, and precious and diverse inheritance of plants and animals. We have reached the point at which the cumulative human impact on the ecosystem itself must be a primary object of our concern as we look to the future - and we must act quickly. Of particular importance to Winrock is the plight of the poor - those who will suffer the consequences of declining per capita availability of arable land, falling water tables, destruction of forests, collapse of fisheries, and the disappearance of life forms on which their livelihoods depend.

In light of Winrock's mission and the global challenges we face, new areas of technology are of special interest and importance to us. Accordingly, we have made an effort to understand biotechnology as it has emerged, and are carefully reviewing current knowledge and practice. The Rockefeller Foundation has provided an initial grant to Winrock to explore how we may accelerate attainment of the promise of biotechnology in the context of our mission while adhering to our science-based commitment to prudence, transparency, and accountability.

GENERAL PRINCIPLES

Winrock supports the development and adoption of sustainable agricultural and forestry systems that simultaneously deliver food security and environmental protection. These systems empower farmers to tailor or adapt inputs and practices to local biological, economic, and social conditions. They also deliver products to consumers that are nutritious and safe. Biotechnology is a collection of potential tools for developing sustainable systems; improved human capital, conventional plant breeding, integrated crop and pest management regimes are examples of other tools. Sound economic, environmental, and social analyses will indicate the mix of systems and approaches most likely to produce the greatest enduring social benefits.

With this background in mind, Winrock sets forth the following general principles to guide and inform our work as it relates to biotechnology. In general, we believe:

Some applications of biotechnology hold promise as a means of improving the lives of the poor and disadvantaged in the years to come.

Of particular importance is the potential contribution of agricultural biotechnology to the goal of improving food security for hundreds of millions of people by increasing

pest and disease damage resistance, micronutrient content, and tolerance to adverse soil conditions, while decreasing the need for purchased chemical inputs and fossil fuels and reducing the environmental damage caused by their use. The crop biotechnologies may also promote more effective food processing and distribution systems to the benefit of farmers and consumers. However, biotechnology applications span a very wide range, with large differences in their productivity, environmental and social effects. Case-by-case assessments are necessary. Winrock will actively seek to identify positive, environmentally desirable biotechnology innovations, and work to improve the access of poor farmers to them and to balanced information about them.

Some agricultural biotechnologies may pose serious dangers to people and to the earth's biological systems, and these dangers are not yet well understood.

The potential environmental dangers of transgenic crops include gene flow, increased pest resistance, recombination into super viruses, adverse effects on beneficial animals, and loss of biodiversity due to farm practice changes. It is important that we, and others, investigate the possible dangers and use this knowledge to help make private and public choices based on good science and a cautious approach to new discoveries that have not been proven to be safe and effective. Several means to assess the impact of biotechnologies are needed, including those that rely on ecosystem analysis, and those that involve participation of end-users and small-scale producers. More public research on the environmental effects of transgenic crops is essential to answer the questions.

Winrock International has an obligation to act when it believes the benefits of new technologies outweigh the risks, and when the risks outweigh the benefits.

Since the production and environmental problems that we address are severe and growing more so by the day, we have an obligation to be mindful of the costs and benefits of caution. This places on us a heavy burden and difficult choices involving impacts across ethnic groups, genders, regions, and countries. Winrock willingly accepts these responsibilities as the price for acting in good faith in pursuit of our mission.

How these new technologies are developed, controlled, and deployed is a legitimate concern for those hoping to assure broad public benefits.

It is clear that existing institutional arrangements are not well designed to deliver effective public choices about biotechnologies, and therefore an important challenge is to invent institutional arrangements and activities that ensure wide access to relevant data and represent the interests of poor farmers in choices about food security and environmental protection. Transparency of public decision processes with respect to biotechnology research, development and regulation is essential. Winrock will promote the design and use of public research and regulatory decision processes on biotechnology that are open to participation by all parties affected by the choices. Further, Winrock will seek to involve in the decision process those who have a vital interest in the decisions taken, but are often excluded from such policymaking.

It is important to know and respect national choices and decisions.

Winrock will seek to understand national preferences and decisions regarding technology, agricultural production, and food consumption and use this knowledge when addressing biotechnology issues in the countries where we work. Informed choice is essential. When possible, Winrock will assist individuals and communities to

understand this rapidly changing field and make decisions that will enhance their own welfare and are consistent with their values.

The United States bears special responsibility, as the source of most biotechnology research and product development, to adopt standards of conduct with respect to biotechnology that represent a model for others.

SPECIFIC ISSUES AND WINROCK'S APPROACH

Sustainable Production Systems

Winrock's approach to biotechnology is guided by the overarching goal of promoting the development and adoption of sustainable agricultural and forestry systems. Sustainable systems must be economically, environmentally, and socially viable, and are marked by the use of flexible and locally adapted and tested strategies to manage production and avoid damage to natural resources and the surrounding ecology. The systems also include open access and competition in the processing and distribution stages of the producer-to-consumer chain.

Food Security and the Welfare of Rural Communities

Food insecurity today is caused principally by poverty. If biotechnology can increase subsistence production, commercial farm income, or income from food processing, food security will be enhanced. Food security problems are often acute for areas with marginal lands and for farmers who grow orphan crops. Commercial agricultural biotechnologies may neglect solutions to these problems because private profits are larger for other applications. Winrock International will promote appropriate research and disseminate the results where significant food security benefits appear likely, but only after careful assessment of the ecological and social impacts. To be effective, agricultural biotechnologies must be an integrated part of a country's overall food security strategy, not a "silver bullet" approach.

Protection of Natural Capital Assets, Including Biodiversity

The Earth's natural capital is under unprecedented stress that will increase with future population and income growth. Unsustainable agricultural and forestry systems have contributed to the stress. For example, water supplies for crop production are under threat in many areas. Biotechnology has the potential to improve the protection of some natural capital assets, for example by making possible drought resistant varieties. It also has the potential to degrade other natural assets, for example, by encouraging the cultivation of marginal lands and contributing to the loss of *in situ* biological diversity. The fundamental problem is that our scientific knowledge of the linkages of biotechnology to the natural environment is small. Whether a transgenic crop will benefit or adversely affect the environment depends on the nature of the crop, where it is used and how it is used. Hence, we may expect a range of environmental effects, some positive and some negative. Winrock supports careful and open ecological assessments of new biotechnologies. Accordingly, we will work to increase public research and education to develop ecological standards and protocols for evaluating agricultural and forestry biotechnologies in a timely manner.

Food Safety and Informed Consumer Choice

Winrock recognizes the right of food consumers to be informed about biotechnologies used in food production and processing. Food consumers may wish to know about food products made with or without biotechnology crops for scientific, ethical or social reasons. Potential human health risks from consumption of genetically modified foods include allergenic and immune system reactions to new substances, toxicity problems from foods that contain increased levels of genetically engineered pesticides, and the incorporation of antibiotic resistance markers. Research should be conducted on all possible health effects using a systems approach. Labeling is a matter of local choice and should be respected, in the U.S. and elsewhere. Hence, Winrock will support efforts to enact reasonable labeling regulations based on democratic decision processes.

Intellectual Property

The development of intellectual property, e.g., U.S. patents, has been a major force in driving private investment and public research in biotechnology. The granting of intellectual property rights to biotechnology involves many issues, including ownership of life forms and equity concerns. These issues deserve careful scrutiny, as do the difficulties of enforcing national claims to genetic stock. Winrock will investigate intellectual property partnerships, licenses or donations that foster the development and adoption of sustainable agricultural and forestry systems.

Winrock will focus on the impact of intellectual property developments on smallholder farmers, because the needs of these farmers, particularly those who are women, may be neglected in the development and dissemination of commercial biotechnologies. For example, Winrock will seek to assure continuing access of small farmers to desirable biotechnologies, for example by permitting seed saving and reuse as recommended by the recent report of seven scientific academies. Also, Winrock will investigate options in the use of biotechnologies that allow the farmers to participate effectively in the processing and distribution stages of the food system.

Corporate Control, Market Globalization, and Liability

Winrock's principal concern is the interests of the poor and disadvantaged and the long-term health of global ecosystems. Accordingly, Winrock will work to increase public and private investments in research that will help people make informed choices about the development and use of biotechnology, and to ensure access to the resulting products and technologies that are most needed.

The development of biotechnology has been led largely by the private sector that has invested in products for the highest value markets in the developed countries. A few global corporations have concentrated control of the technologies. In principle, Winrock will support compensatory mechanisms for the poor and others who have not benefited from biotechnology development that serves their needs, while supporting the general benefits associated with open markets and global trade. Compensatory mechanisms, for example, may include stronger public research and education related to orphan crops. Winrock endorses the principle that those who develop, deploy, and own technology should be liable for any damage inflicted. A primary task will be to

encourage open and productive debate about biotechnology and ensure broad participation of developing country stakeholders.

WINROCK INTERNATIONAL ACTION

Winrock International will:

Encourage private and public research institutions to develop safe biotechnology products that will directly benefit the poor and disadvantaged and protect the environment.

Winrock supports research into transgenic traits that can be used within ecologically sound approaches to agriculture, as recommended by the National Research Council. Examples of such traits include damage tolerance or the development of perennial versions of annual crops, such as perennial corn. If a plant is bred to tolerate damage, then the insect or virus pest is not killed, and less ecological pressure results. Perennial crops that replace annuals, if properly managed, could significantly reduce soil erosion by decreasing the need for tillage. Each transgenic trait should be subject to appropriate bio-safety protocols. Once approved, these traits could result in large, long-lasting private and public benefits. The thrust of the public research and development should be on the products and solutions that are unlikely to result from the normal workings of the market.

Help build the institutional capacities to implement democratic processes that govern the development and diffusion of biotechnology for the benefit of the poor and disadvantaged.

Winrock will work to build cost effective forms of democratic decision making at the local and national levels that can shape the development and implementation of biotechnologies needed by small holders and other disadvantaged farmers.

Help other countries understand the promise and danger of biotechnology

and help them design public policies that will reflect this understanding to protect themselves from possible negative effects of biotechnology while promoting their access to beneficial uses.

Help transfer and introduce promising and safe biotechnology products

to those countries where they will contribute to food security, and where normal commercial practice is unlikely to address this problem. In particular, we will help increase access of poor farmers to information and technologies that will foster the sustainable production of orphan crops. We will also increase access for the farmers using biotechnologies to the processing and distribution stages of the food system.

Assist countries in developing the human resources necessary to develop appropriate biotechnology policies and manage biotechnology programs.

Institutional support and human capacity building activities will include workshops, symposia, exchange programs, and training courses.