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Agbio and Third World Development

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CELEBRATING
A DECADE OF
EXCELLENCE

For those of us monitoring the social and economic impacts of new agricultural biotechnologies, the past decade has been deeply disappointing. Instead of durable pest resistance, the industry focuses on short-term pesticide tolerance. Rather than concentrate on sustainable agriculture, companies engineer proprietary vegetables with extended shelf life. Rather than feed the world, biotechnology threatens to compound the problems of the poor and hungry. Looking ahead to 2003, will biotechnology bring opportunity or obstacles for agriculture and Third World development? The most fundamental issues involve control, ownership, and access to biological diversity.

Access to exotic germplasm (still found largely in Third World centers of diversity) is the lifeblood of commercial agricultural biotechnology—it provides the “strategic raw materials” for today’s gene movers and shakers. But these are not truly “raw materials”—they are the products of human innovation, both historic and ongoing. Over the past 12,000 years Third World farmers selected and domesticated all major food crops on which humankind survives today. Fresh infusions of these genes are vital for the ongoing maintenance and improvement of agriculture.

Long-standing inequities in the free flow of plant genetic resources from South to North have been the subject of heated controversy since the early 1980s. At the United Nations, Third World ambassadors demand to know: Why are patented seeds, ultimately of Third World origin, bringing profits to multinational seed and agrichemical corporations without corresponding compensation for Third World farmers? Tragically, emerging biotechnologies will add new dimensions to existing inequities, and thus aggravate rather than alleviate the problems of the poor.

Third World economies are severely threatened by biotechnology R & D that promises to eliminate or displace their traditional export commodities. In Africa alone, well over 2.5 million farm families and \$10 billion in exports are vulnerable to industry-induced changes in raw material prices and requirements. Biosynthesis of high-value ingredients like vanilla, pyrethrum, and rubber, for example, will ultimately transfer production out of farmers’ fields into industrial bioreactors. Early in the next century, millions of Third World farmers will suffer displacement, wreaking havoc on many already debt-ridden economies.

Over the past 30 years, the greatest cause of genetic erosion in Third World centers of diversity resulted from the introduction of so-called “miracle seeds” of the Green Revolution. High-yielding, genetically uniform seed varieties replaced farmers’ traditional varieties on a massive scale. Will the “Gene Revolution”

usher in a new wave of genetic erosion on a yet more massive scale? A related threat to biodiversity and the Third World poor concerns the ecological risks of introducing genetically engineered plants and microorganisms in Third World centers of diversity. Will biotechnology firms seeking to penetrate new markets take into account the heightened risks posed to ecosystems where wild and weedy relatives of major food and industrial crops are found? Will developing countries once again become the dumping grounds for new and untested products?

Perhaps most ominous is the spectre of life patenting. Efforts by developing nations to be compensated for their genetic resources are now being thwarted by industrial efforts to obtain monopoly control over new products and processes of biotechnology. At the General Agreement on Trade and Tariffs (GATT), developing nations are being strong-armed into adopting intellectual property regimes that may be entirely inappropriate for their needs and level of development. For Third World farmers and consumers it means having to pay royalties on biotechnology products that were developed using their own resources and knowledge.

If present trends continue, by the year 2003 life patenting will strangle innovation and stifle the free flow of information and genetic resources so vital to industry as well as agricultural development worldwide. The signs of controversy and dissent are everywhere: The recent actions of over 500 angry farmers who ransacked a local Cargill office in Bangalore, India to protest the intellectual property provisions of the GATT negotiations are but a single instance.

International tension over the ownership of genetic resources will intensify as Third World countries recognize that the Biodiversity Convention (under U. S. pressure) specifically excludes *ex situ* gene bank material collected before the enactment of the Biodiversity Treaty. This means that the comparatively huge stockpile of agricultural germplasm held by the industrialized North—most of it gathered from tropical and subtropical countries—remains outside the agreement. There is no quick fix for the conflict. Unless the biodiversity treaty is renegotiated, and a meaningful compensation package arranged, industry access to the South’s diversity will be subject to embargo and dispute.

The ultimate danger is that the exchange of genetic material and information which is so vital for global food security will be severely constricted, undermining efforts to conserve biodiversity and guarantee access to it. This conflict involves a great deal more than U. S. competitiveness in biotechnology; at stake is future control of the world’s food supply, the sustainability of agriculture, and the hope of economic development for many Third World nations.

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