

GOVERNING THE GM CROP REVOLUTION: POLICY CHOICES FOR DEVELOPING COUNTRIES

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Will developing countries adopt policies that promote the planting of genetically modified (GM) crops, or will they select policies that slow the spread of the GM crop revolution? The evidence so far is mixed. In some prominent countries such as China, policies are in place that encourage the independent development and planting of GM crops. Yet in a number of other equally prominent countries the planting of GM crops is not yet officially approved.

The inclination of developing countries to promote or block the spread of GM crops can be judged by the policy choices they make in five separate areas: intellectual property rights (IPR) policy, biosafety policy, trade policy, food safety policy, and public research investments (Table 1).

POLICY OPTIONS TOWARD GM CROPS

Intellectual Property Rights. If developing countries want to bring GM crop technologies into their farming systems, they may have to recognize some of the intellectual property rights claims of the private companies that have been developing GM crops. At one extreme, they might even adopt the U.S. approach and provide full patent protection. A somewhat less promotional policy could offer only plant breeders' rights as IPR guarantees, which entitle breeders to use protected varieties as an initial source of variation for the creation of new varieties as in the 1991 agreement of the Union for the Protection of New Varieties of Plant (UPOV). A still weaker approach would be to embrace an earlier 1978 version of UPOV, which preserves the privilege of farmers to replant seeds from protected varieties on their own farms. Weaker still would be to provide no IPRs at all for plant breeders.

Biosafety. In the area of biological safety, the most promotional policy toward GM crops would be to approve the use of these crops without any careful case-by-case screening for unwanted gene flow or damage to nontarget species. A less promotional approach would be to screen GM crops case by case but only for risks that can be scientifically demonstrated. A more cautious approach would be to hold crops off the market case by case even without proof of risk so long as some scientific uncertainties remained. The most cautious approach would be to assume risk in all cases because of the novelty of the GM process.

Trade. Consumer acceptance of GM crops in major importing countries continues to evolve. Assuming adequate consumer acceptance, a promotional trade policy toward GM crops would be to seek the import of GM plant materials and seeds without restriction and promote the planting of GM crops in hopes of cutting farm production costs and becoming a more competitive exporter. A more neutral approach would be to neither promote nor prevent the planting of GM crops and to treat GM seed and commodity imports the same way as

non-GM imports. A more cautious trade policy approach would be to develop and implement a separate and more restrictive method for regulating and labeling the import of GM seeds or commodities compared with non-GM. A preventive trade policy choice would be to ban GM imports and block the planting of GM crops. If consumer acceptance of GM crops in international markets continues to weaken, such a ban on planting GM crops could be defended on trade grounds as a way to seek price premiums on the world market as a "GM-free" exporter.

Food Safety and Consumer Choice. In this area a promotional policy would be to conclude that GM crops currently on the market pose no new hazards to human health and to impose no additional inspection or labeling burdens on them. A less promotional approach would be to require labeling of some GM foods in the interest of a consumer's right to know but to make the labeling standards lenient enough so that a complete segregation of GM from non-GM commodities is not required. A still more cautious approach would be to impose mandatory comprehensive labeling for all GM foods in a manner that would require market segregation. A fully preventive approach would be to ban all GM foods or to label them in ways intended to stigmatize and prevent their use.

Public Research Investments. Developing countries must also make a range of agricultural research investment choices toward GM crops. At one extreme they might spend treasury resources to develop their own GM crops. As a second option they could invest only in the more limited goal of backcrossing GM traits developed by others into their own domestic germplasm. As a still more limited option they could allow their scientists to pursue backcrossing of transgenes into local varieties only if donors were willing to pay for it. At a preventive extreme they could decide not to spend any money, even donor money, on GM crop research.

POLICY CHOICES IN FOUR DEVELOPING COUNTRIES

This system can be used to classify the actual policy choices toward GM crops that were made by governments in Brazil, China, India, and Kenya in 1999–2000 (Table 2). Whereas China opted for relatively permissive policies toward GM crops, Brazil, India, and Kenya have in most respects been more precautionary.

In Brazil, India, and Kenya biosafety approval has emerged as the principal point of resistance against moving the GM crop revolution forward. This is a surprising discovery given the fact that biosafety approvals for GM crops have not been such a strong sticking point in the industrial world, given the traditionally weak agricultural biosafety policies of most developing countries, and given the potential biosafety



Table 1—Policy options toward GM crops

	Promotional	Permissive	Precautionary	Preventive
Intellectual property rights	Full patent protection, plus plant breeders' rights under UPOV 1991	PBRs under UPOV 1991	PBRs under UPOV 1978, which preserves farmers' privilege	No IPRs for plants or animals, or IPRs on paper that are not enforced
Biosafety	No careful screening, only token screening, or approval based on approvals in other countries	Case-by-case screening for demonstrated risk, depending on intended use of product	Case-by-case screening also for scientific uncertainties owing to novelty of GM process	No careful case-by-case screening; risk assumed because of GM process
Trade	GM crops promoted to lower commodity production costs and boost exports; no restrictions on imports of GM seeds or plant materials	GM crops neither promoted nor prevented; imports of GM commodities limited in same way as non-GM in accordance with science-based WTO standards	Imports of GM seeds and materials screened or restrained separately and more tightly than non-GM; labeling requirements imposed on import of GM foods or commodities	GM seed and plant imports blocked; GM-free status maintained in hopes of capturing export market premiums
Food safety and consumer choice	No regulatory distinction drawn between GM and non-GM foods when testing or labeling for food safety	Distinction made between GM and non-GM foods on some existing food labels but not so as to require segregation of market channels	Comprehensive positive labeling of all GM foods required and enforced with segregated market channels	GM food sales banned, or warning labels that stigmatize GM foods as unsafe to consumers required
Public research investment	Treasury resources spent on both development and local adaptations of GM crop technologies	Treasury resources spent on local adaptations of GM crop technologies but not on development of new transgenes	No significant treasury resources spent on GM crop research or adaptation; donors allowed to finance local adaptations of GM crops	Neither treasury nor donor funds spent on any adaptation or development of GM crop technology

Note: UPOV = Union for the Protection of New Varieties of Plant; PBRs = plant breeders' rights; WTO = World Trade Organization.

benefits of some GM crop applications (those that permit fewer and less toxic chemical sprays). It is particularly surprising that Brazil and India have moved so slowly on biosafety approvals for GM crops, given the significant state investments that are simultaneously being made in both countries to develop GM crops.

International pressures of four kinds help explain this pattern of caution in the developing world: (1) environmental groups based in Europe and North America have used media campaigns, lawsuits, and direct actions to project into the developing world a tone of extreme caution toward GM crops; (2) consumer doubts in Europe and Japan regarding GM crops have discouraged planting of those crops by developing-country exporters; (3) the precautionary tone of the 2000 Biosafety Protocol governing transboundary movements of GM crops is reinforcing biosafety caution in the developing world; and (4) donor assistance to developing countries in the area of agribiotechnology has often focused more on the possible biosafety risks of the new technology than on its possible agronomic or economic advantages. One reason for China's more permissive biosafety policy is its greater insulation from some of these international influences promoting caution elsewhere.

A further spread of GM crops into the developing world will therefore depend on more than just the availability of suitable technologies. It will also depend upon the future willingness of biosafety authorities in developing countries to give farmers

permission to plant GM crops. This willingness, in turn, will likely depend as much on the external pressures and influences faced by these regulators as upon actual documented threats to biosafety from GM crops.

Table 2—Policies toward GM crops in Brazil, China, India, and Kenya, 1999–2000

	Promotional	Permissive	Precautionary	Preventive
Intellectual property rights		Brazil	Kenya China	India
Biosafety		China	Kenya Brazil India	
Trade		China	Kenya Brazil	India
Food safety and consumer choice	Kenya China	Brazil India		
Public research investment	Brazil India China		Kenya	

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