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Agricultural Biotechnology and the FTAA: Issues and Opportunities[1]

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This article examines trade and intellectual property rights questions associated with agricultural biotechnology in the Western Hemisphere and goes on to chart a potential course through which they could be addressed by an agreement on a Free Trade Area of the Americas. Issues pertaining to import approvals, labelling, exports to sensitive markets, intellectual property piracy and regulatory cooperation are considered.

Keywords: biotechnology, BioSafety Protocol, Free Trade Area of the Americas, FTAA, World Trade Organization.

Introduction

Biotechnology is not a distinct negotiating item in the negotiations for a Free Trade Area of the Americas (FTAA) and to date it has not been a major topic of discussion. Similarly, biotechnology was not directly mentioned in the 2001 Doha Ministerial Declaration that launched a new round of multilateral trade negotiations under the auspices of the World Trade Organization (WTO). Nevertheless, controversies concerning agricultural biotechnology pose serious looming problems for the world trading system and trade relations within the Western Hemisphere are unlikely to be untouched. Consequently, continued inattention to biotechnology may ultimately but unnecessarily impair the ability of an FTAA to handle future agricultural trade disputes.

Given the state of incomplete information that inevitably accompanies a significant new technology, national governments have chosen to weigh the costs, benefits and risks associated with biotechnology differently and at their own pace. As a result, there is a lack of regulatory harmonization among countries within the Western Hemisphere. National interests differ with respect to trade in products of biotechnology. Countries such as Argentina, Canada and the United States, which have moved rapidly into the commercial production of biotechnology, want foreign market access for their products, while other countries, such as Brazil, that have been more cautious may wish to exclude genetically modified (GM) products from their markets. Since the United States is home to many of the large multinational bioscience firms and is the primary centre of biotechnology innovation, its interest in open markets is strongly reinforced. Meanwhile, tropical and subtropical countries within the hemisphere have largely been left out of the biotechnology game so far, because the primary emphasis of research has been on temperate crops.

In some respects the trade pressures generated by biotechnology innovation that are beginning to surface simply mirror past technological changes in agriculture. Since biotechnology represents a new wave of labour-saving technological change in agriculture, producers are likely to lobby governments for support and protection from foreign competition. Yet biotechnology also gives rise to potential environmental, ethical and health controversies that have opened the door to significant resistance to both domestic agricultural production and imports of genetically modified (GM) products from environmental and consumer groups. Further, some seemingly attractive potential remedies to consumer problems, such as labelling, are likely to involve significant costs in terms of supply chain segregation.

The current international trade and investment regime lacks clarity with respect to agricultural biotechnology in part because major international trade agreements — including the WTO, the North American Free Trade Agreement (NAFTA), and MERCOSUR (the Southern Cone Common Market) — were negotiated prior to the widespread commercialization of biotechnology. In large measure, the machinery of these trade agreements was designed to deal with protectionist pressure from import-competing producer groups. The applicability of the WTO's Sanitary and Phyto-Sanitary (SPS) and Technical Barriers to Trade (TBT) agreements to the controversies posed by biotechnology is limited and there is jurisdictional ambiguity between the SPS and the BioSafety Protocol (BSP). Further, the ability of the Trade Related Intellectual Property Rights (TRIPS) Agreement to protect biotechnology innovations is open to question. Framing effective, non-contradictory FTAA rules in areas relating to biotechnology, thus, will be a challenge. Further, some Western Hemisphere countries could suffer trade diversion if exports to outsiders such as the European Union and Japan are curtailed or subjected to costly segregation and onerous regulation.

The remainder of this article is organised as follows. A brief overview of biotechnology production and regulation in the Western Hemisphere is provided in section 2 and international commitments and looming trade issues are discussed in section 3. Sections 4 to 6 provide economic analysis of production and consumption issues, trade issues, and intellectual property issues. Finally, in section 7, implications for the FTAA and the broader world trade system are considered.

Biotechnology in the Western Hemisphere

Three Western Hemisphere countries alone accounted for 96 percent of world biotechnology production in 2001. The United States grew 35.7 million hectares (68 percent of the global total). Argentina grew 11.8 million hectares (22 percent) while Canada grew 3.2 million hectares (6 percent) (James, 2001). The principal GM crops in commercial production are soybeans, maize (corn), cotton and canola (rapeseed). Additional GM crops in production include: melons, papaya, potatoes, rice, squash, sugar beets, tobacco and tomatoes. A number of countries have also approved release of one or more varieties of genetically modified fish, trees, microbes, drugs, and various vaccines for animals. Many other crops and a range of animal species and microbes have been genetically modified and await regulatory approval. While the first commercial GM products have had input traits such as herbicide

tolerance or pest resistance that are of value primarily to farmers, there is now an increasing focus on output traits that are of value to consumers.

The fact that this first wave of GM crops is largely tailored to temperate climates implies that the potential benefits of biotechnology have not yet reached countries with subtropical and tropical climates within the Western Hemisphere. For example, even though Mexico is a significant maize producer the GM varieties developed to date have not been appropriate to its agronomic conditions. The focus to date on traditional temperate crops has also meant that countries with subtropical and tropical climates have not yet had to face some of the potential trade problems posed by biotechnology. Future developments in biotechnology pertaining to crops such as sugar, coffee and bananas could pose difficult choices between adopting the new technology or maintaining GM-sensitive markets such as the EU. Further, biotechnology holds the possibility that GM versions of traditional tropical and subtropical crops may be producible in temperate climates (or vice versa) opening the door to more extreme competitive pressures (or new opportunities).

In the Western Hemisphere, with the exception of Brazil, public resistance to biotechnology has tended to be more muted than in the EU and Japan. Argentina, Canada and the United States have operative regulatory systems that have led to approval and rapid commercialization of products of biotechnology. These countries, therefore, are likely to strongly advocate an open trading system within an FTAA. By contrast, in tropical and subtropical countries within the hemisphere, regulatory systems tend to be less tested and, not surprisingly, less fully developed.

The controversies over the licensing of GM products in Brazil are reminiscent of those in the EU. Despite the general support of biotechnology by the previous Brazilian Federal Government (Avila et al., 2001), there has been active resistance to GM products, particularly by environmental non-government organizations (NGOs), which have raised questions about biosafety (Portugal et al., 2001). While the government regulator and licensing body, the National Technical BioSafety Committee (CNTBio), has approved the licensing of GM soybeans, implementation has been delayed by a long series of court challenges. In the interim, Brazil has benefited from access to EU markets, which have been increasingly closed to the United States and Argentina because those two countries license GM soybeans. To a lesser extent Brazilian maize has also benefited from access to the EU market due to its GM-free status. Brazil, however, may have difficulty maintaining its position in the EU market. It is common knowledge that there is considerable smuggling of GM seed into Brazil from Argentina and that illegal production of GM soybeans is taking place.

Thus, Brazil's official GM-free status remains precarious and may be questioned by the EU. The controversy over commercialization in Brazil has not deterred research efforts in the area of agricultural biotechnology. CTNBio has approved a wide range of field tests with transgenic plants. GM crops such as corn, soybeans, cotton, eucalyptus, sugarcane, tobacco, potatoes, sweet corn and papaya are all at the pre-commercialization stage.

Looming Problems in the International System

The widespread production of GM crops in the Western Hemisphere has already become a fact of life because the decision to use GM technology is generally perceived to be irreversible (Gray and Hobbs, 2001). Since the three key GM-producing countries — Argentina, Canada and the United States — each rank among the world's top agricultural exporters, this clearly poses important questions concerning the conduct of international trade in the Western Hemisphere and beyond. In principle, international trade in products of biotechnology is intended to be coordinated by a variety of international organizations and agreements that have authority in differing spheres ranging from health standards and environmental regulations to overarching international trade rules (Phillips and Kerr, 2002).

Science-based standards pertaining to food, plant and animal safety are set by the *Codex Alimentarius* Commission (Codex), the International Plant Protection Convention (IPPC) and the International Office of Epizootics (OIE) respectively. These organizations potentially have a major role in the regulation of international trade in products of biotechnology even though they have much broader mandates. In addition, the Organization for Economic Cooperation and Development (OECD) has actively assisted in the harmonisation of international regulatory requirements, standards and policies related to biotechnology (OECD, 2000).

On the environmental protection front, the BioSafety Protocol (BSP) intends to provide rules for transboundary movements of GM organisms intended for environmental release and for those destined for the food chain. For living GM organisms (e.g., seeds for propagation, seedlings, fish for release), exporters will be required to obtain approval from importing countries. Despite its laudable intentions, the BSP appears to allow considerable latitude for unwarranted protectionism. It allows importing countries to consider "socio-economic factors" (e.g., the impact on local farmers) in their decisions, provided they respect their other international obligations. While the need for appropriate valuation of biodiversity and other environmental externalities is recognized, allowing a direct role for vested interests in

restricting trade in GM organisms is not legitimate. The BSP also includes a so-called *precautionary principle*, whereby countries do not have to have complete scientific certainty to block imports of a GM product that they fear could be harmful to biological diversity. Since the development of GM organisms necessarily implies an initial state of incomplete information, initial precaution is surely reasonable. The problem with the precautionary principle, however, is that it is open-ended and does not require a move to scientific risk assessment within a reasonable time frame. Before it can come into force, the protocol requires that 50 countries sign and ratify it. Since the United States, which is the single largest producer of GM crops, has not ratified the enabling 1992 Convention on Biological Diversity, it will not be a party to the protocol, even though it may choose to abide by it. The ambiguity of the U.S. position with respect to the BSP further complicates the international trade regime.

Within the WTO, the formal trade rules for trade in products of biotechnology fall mainly under the SPS, TBT and TRIPS agreements. The central premise of the SPS Agreement is that member countries should be able to bar access to their domestic markets when imported products pose a serious risk to animal or plant safety or human health, but that they should be prevented from introducing measures that are disguised trade barriers. To this end the SPS Agreement specifies that non-discriminatory domestic measures that are consistent with international standards set by the IPPC, the OIE or the Codex are automatically acceptable. National measures that are in excess of established international standards or implemented where no international agreement yet exists must be based on scientific principles and require the completion of a risk assessment study. As currently interpreted, however, the SPS Agreement does not permit non-science concerns such as consumer preferences or non-measurable environmental risks to be considered in the determination of whether an SPS measure is acceptable (Gaisford, et al., 2001). Given that information is initially incomplete when a new GM product is introduced and risks are speculative rather than objective, the requirement of a scientific risk assessment at the outset is unduly onerous. By contrast with the BSP, it appears, the SPS Agreement allows too little room for precaution.

The Biosafety Protocol is evidently at odds with the SPS Agreement (Phillips and Kerr, 2000). Since the jurisdictions of the two agreements overlap, there will be considerable potential for a major institutional confrontation when and if the BSP comes into force (Isaac, et al., 2002). In an attempt to forestall such a confrontation, it was agreed at the Doha WTO Ministerial that negotiations would take place to clarify the relationship between multilateral environment agreements (MEAs) and the WTO.

In the specific case of the BSP versus the SPS Agreement, clarification may prove to be difficult because of the decision not to subject the SPS Agreement to further negotiation in the Doha Round. It may be unwise, therefore, to blithely assume WTO versus MEA clarifications, particularly as they pertain to biotechnology, will be successful and in place at the conclusion of the FTAA negotiations.

Even in cases where there is no health risk, the WTO-administered TBT Agreement may allow countries to put labelling requirements on imports of GM foods. For labelling to be permissible, the benefits of labelling must demonstrably exceed the costs and the GM and the non-GM products must not be "like" products. In the case of biotechnology, both requirements are problematic. The supply chain segregation necessitated by labelling is likely to impose significant costs, which may outweigh the benefits. Further, if biotechnology is deemed to simply represent a different production and processing method (PPM) that does not result in a different final good, then the TBT does not allow the imposition of trade barriers. Given a situation where there is no claimed health risk, it is hard to argue that GM and non-GM products are not like products. Rather, it would seem that the fundamental difference is in the PPM that was used. Further, food processing often removes any evidence of transgenic material from the final product (e.g., canola oil). Developing countries have been particularly resistant to PPMs being included as a rationale for the imposition of trade barriers because such a regime would be wide open for protectionist abuse pertaining to their exports. For example, textiles produced by low-tech methods could be kept out of developed-country markets on the basis of the technology used. In terms of biotechnology, however, not to allow identification of PPMs would mean that the WTO would have no means to satisfy demands relating to the *consumers' right to know* about the PPMs used to produce the products imported into their markets (Isaac et al., 2002).

The WTO also manages the TRIPS Agreement, which augments but does not replace the World Intellectual Property Organization established in 1967, the Berne Convention on copyrights of 1883 and the Paris Convention on patents of 1883. Intellectual property rights disputes concerning biotechnology seem likely to arise. While biotechnology innovation is officially covered by the TRIPS Agreement, many developing countries had, and continue to have, serious reservations regarding the protection of intellectual property in agricultural crops (Kerr et al., 1999). When the Uruguay Round was concluded in 1994, most developing countries were given a six-year phase-in period to put domestic legislation and enforcement mechanisms in place. That period of grace has now expired and cases can be expected to begin

coming forward. Indeed, it seems likely that developed countries will want to vigorously protect their intellectual property. One of the major reasons for the establishment of the WTO and the unified dispute-settlement system it administers was to enable cross-agreement retaliation, whereby countries can, for example, use trade sanctions under GATT for violations of intellectual property protection under TRIPS (Kerr and Yampoin, 2000).

At the level of regional trade, the EU has well-developed regimes dealing with sanitary and phytosanitary issues and environmental issues, but to date it is at a standstill in dealing with the regulation of biotechnology. This paralysis has arisen because of differences among member states over the licensing as well as direct action by civil-society NGOs (Falkner, 2001). Other regional trade agreements such as NAFTA and MERCOSUR have been less ambitious, in effect deferring for the most part to the SPS and TBT agreements. NAFTA does have a Committee on Sanitary and Phytosanitary Measures, which has a mandate to work toward harmonisation of the national regulatory regimes of the three member countries, but little progress has been apparent (Kerr, 2002).

It is important to consider how to design an FTAA to handle the complex issues of biotechnology in a way that is compatible with the existing international regime but overcomes some of the important shortcomings of that regime. In order to chart a reasonable course, it is useful to consider some key aspects of the economic analysis of biotechnology, starting with basic production, consumption and environmental issues.

Producer, Consumer and Environmental Issues

There is a broad spectrum of public misgivings with respect to biotechnology that includes often speculative food safety issues, ethical concerns, environmental issues and qualms regarding the power of multinational enterprises. There is, in fact, an economic basis for concern over so-called "market failure" associated with each of these issues.

Perceived food safety issues, ethical concerns and even environmental worries may lead some consumers to prefer to consume non-GM food varieties rather than GM varieties if other things such as prices are equal. In other words, consumers may legitimately perceive that GM varieties are of lower quality than the corresponding non-GM varieties. This is particularly true for the initial GM crops, which have input traits that are beneficial to producers, rather than output traits that are potentially beneficial to consumers. Genetic modification, however, is a "credence characteristic"

whose presence or absence cannot be detected by consumers even after consumption has taken place. In the absence of an effective system of labelling and supply chain segregation, consumers will face an asymmetric information situation arising from indistinguishable or hidden qualities (Akerlof, 1971). Due to co-mingling, the introduction of a new GM food will frequently lead to an adverse quality effect as well as a beneficial price effect (Plunkett and Gaisford, 2000; Gaisford et al., 2001). The aggregate effect on consumers is ambiguous; some individual consumers will benefit from the GM food while others will be hurt.

Labelling does not necessarily help matters. If a labelling and supply chain segregation system were able to costlessly establish 100 percent purity on the non-GM side of the market, then consumers would unambiguously benefit from the introduction of GM foods. Complete purity on the non-GM side of the market, however, is impossible to obtain both because of accidental contamination at various points in supply chains and because of the incentive for deliberate fraud that arises because the non-GM food commands a price premium (Folkins, 2001). Labelling and supply chain segregation are likely to impose significant costs and these costs are likely to rise dramatically as the threshold for purity rises, for example from 95 percent to 99 percent (Hobbs, 2000). The costs associated with labelling and segregation add to the prices of both GM and non-GM varieties and thus imply that a labelling regime may not be warranted even if the introduction of the GM food reduces aggregate consumer welfare.

The release of GM organisms into the environment may lead to so-called externalities, or external costs that are not borne by individual producers but are borne by others. The possibilities for environmental damage range from specific issues, such as harm to monarch butterflies, to broader potential problems, such as risks to biodiversity. Since the external costs associated with actual or potential environmental damage are borne broadly by society in general rather than by a small number of individuals or firms, market-generated bargaining solutions are not likely to be workable. Rather, government intervention, say in the form of corrective or "Pigouvian" taxes, is needed such that producers effectively face the true costs of production inclusive of environmental costs. It should be noted, however, that the presence of external costs associated with the environment does not imply that GM crops are overproduced in an absolute sense or relative to their non-GM counterparts. While the failure to consider external costs tends to push the output of a GM crop above the economically efficient level, high seed prices due to imperfect competition in input markets push output in the opposite direction. Further, in comparison with

non-GM crops, GM crops may generate lower external costs associated with environmental damage, for example due to reduced pesticide application in the case of pest-resistant GM crops (Gaisford et al., 2001).

Producers of GM crops are subject to the market power of large multinational bioscience firms, which frequently control chemical inputs as well. In addition to prices that are in excess of those for conventional seed, farm-level producers frequently face more stringent contracts. Of course, farm-level producers are not homogeneous. Those firms that are able to adopt a new biotechnology earn positive profit, while those that are not are subject to more intense competitive pressure. Regulatory approval for a new biotechnology also implies a new trade risk for producers, since their crops may be shunned in foreign markets (Kerr et al., 2001). Due to co-mingling, these risks may apply to producers of the non-GM as well as GM varieties.

Analysis of Trade Issues

The producer, consumer and environmental facets of biotechnology, which have just been outlined, have important implications for international trade, and thus for trade agreements such as the FTAA. Consider a potential importing country or jurisdiction such as the EU, which does not allow GM production. A full embargo on all (GM and non-GM) imports or a partial embargo (on GM imports only) *may* be superior to open access for GM imports. This is because it may be preferable to avoid the adverse quality effect even though the gains from trade are sacrificed. Even so, allowing labelled GM imports is typically superior to imposing a partial embargo, which in turn is superior to imposing a full embargo. Nevertheless, a labelling regime *may* not be superior to unrestricted access due to the segregation costs associated with the former. Consequently, there is no automatic ranking of import regimes, and departures from unrestricted access are sometimes justifiable on the basis of sound economics (Gaisford and Lau, 2000; Gaisford and Kerr, 2001).

Exporting countries also face a series of conundrums. For tropical and subtropical exporting countries, appropriate GM varieties may not exist, as in the case of maize for Mexico. Moreover, if bioscience firms perceive that such countries are not equipped to provide timely approvals, the incentive for them to invest in appropriate technologies will be further diluted. More generally, approval of GM production may lead to the need for costly supply chain segregation to preserve export markets, as in the case of Canadian canola destined for Japan. Other sensitive markets, such as the

EU, may be lost entirely. Faced with these possibilities a country might elect to strategically delay the approval of GM production to preserve its export markets.

Regional trade agreements (RTAs) may further complicate the trade picture by causing the diversion of non-GM exports for some member countries. Suppose that the RTA prevents a country from strategically delaying regulatory approval and/or requires it to accept cheaper GM imports. In either case, the potential for co-mingling may render its product ineligible for markets such as the EU. For example, Brazil's US $1.8 billion soybean exports to the EU could be at risk under an FTAA. Nevertheless, the situation with respect to Brazilian soybeans may be transitory in any event. The EU may object to widespread illegal GM production or the Brazilian courts may finally uphold the regulatory decision authorizing GM production. While it appears that there are few Western Hemisphere products other than soybeans where large export volumes are vulnerable to diversion at present, Brazilian tobacco exports to the EU (US $0.47 billion) could be in question on the near horizon and other products — including those of tropical and subtropical countries — may be implicated in the more distant future.

This analysis begs the question of whether an RTA should attempt to prevent member countries from delaying approval for production and/or imports on purely strategic grounds. Administratively it may be costly and contentious to put policing mechanisms into place to force members into line. Moreover, there is little economic point in either preventing or encouraging the strategic delays in regulatory approval. On the one hand, if Brazil chooses to delay approval of GM soybeans in order to maintain access to the EU market the result is less competition and higher prices for the United States and Argentina in markets that accept GM soybeans. Thus, a strategic export policy that provides short-term benefits to Brazil in non-GM export markets will also frequently yield short-term benefits to Argentina and the United States in GM markets. Indeed, this type of mutual market advantage will generally prevail given the likely situation where the strategic player is a net exporter. On the other hand, there is little point in attempting to coordinate regulatory approvals to strategically exploit GM and non-GM export markets beyond the hemisphere both because these opportunities are likely to be transitory and because they may ultimately delay the acceptance of GM imports.

Analysis of Intellectual Property Issues

In addition to direct trade issues posed by biotechnology, there are a number of trade related aspects of intellectual property rights. Innovative ideas such as those

pertaining to biotechnology are public goods in that they are generally non-rivalrous (i.e., everyone can simultaneously use the idea) and non-excludable (i.e., other users cannot easily be prevented by the innovator). Left to there own devices, markets would generate underinvestment in innovation because each firm would tend to free ride on the research and development investments of other firms. In this situation of market failure, the best available solution is generally intellectual property protection through patents, copyrights, and so forth. Of course, this solution is imperfect because it offers a temporary monopoly as the inducement for greater innovation.

There is a need for international coordination in protection for intellectual property rights so that each nation does not free ride on the innovations of other nations. Under the TRIPS Agreement, developing and developed countries alike are subject to the same minimum standards for intellectual property protection (e.g., 20 years for the duration of patents). It appears that at least some developing countries are being hurt by these uniform standards because the net benefits of innovation are skewed heavily in favour of the developed countries, which do the bulk of the innovating (Deardorff, 1992; Gaisford and Richardson, 2000). This calls into question the willingness of developing countries to rigorously enforce intellectual property rights pertaining to biotechnology. The TRIPS Agreement tries to head off this problem by requiring national enforcement mechanisms and allowing for cross-agreement retaliation whereby a country can impose trade sanctions on imports from a violating country if a WTO panel upholds its intellectual property rights complaint. Nevertheless, the threat of trade penalties may be insufficient to deter lax enforcement (Kerr and Yampoin, 2000; Giannakas, 2001; Gaisford et al.., 2002). Consequently, new biotechnologies — following computer software, music CDs, etc. — may be increasingly subject to piracy in developing countries. For this reason, it may be wise to introduce FTAA provisions that provide developing countries with a greater (positive) incentive to enforce intellectual property rights pertaining to biotechnology.

Further intellectual property disputes may arise because of fuzziness in the boundaries concerning intellectual property protection in biotechnology. Each biotechnology innovation generally goes through the phases of collection of genetic material, gene isolation for useful traits, and gene insertion to create potentially useful crop varieties and/or other products. While allowing patents on GM organisms that result from the insertion of genes into existing organisms generally does encourage innovation, it may be noted that the existing practice in most developed countries of allowing patents at the phase of gene isolation probably does more to retard innovation by preventing widespread, low-cost use of isolated genes. Further,

developing countries and their advocates have sometimes argued that sources of genetic material — which include traditional crop varieties or landraces, wild varieties and species with no previous commercial value — should be subject to patents or other intellectual property rights protection to avoid "biopiracy" by developed countries. While the basic genetic material undoubtedly has features of a public good, it already exists. Intellectual property protection would introduce a monopoly distortion without increasing the availability of the underlying public good. While the argument for this sort of protection, thus, should be strongly resisted on efficiency grounds in the FTAA negotiations and in other venues, it does point to the need to address the unresolved equity issues concerning intellectual property rights. Further, it points to the potential for conflict between the TRIPS Agreement and the Convention on Biological Diversity because the latter makes provisions for "farmers' rights" (Esquinas-Alcázar, 1998).

Conclusion: Biotechnology Trade and the FTAA

An important goal of the FTAA negotiations should be to establish an open, transparent trade regime for products of agricultural biotechnology. Although regulatory harmonization relating to approval for products of biotechnology has so far eluded the EU and is likely to be well beyond the grasp of Western Hemisphere countries, meaningful regulatory cooperation (e.g., information sharing) is both desirable and politically feasible. It should be recognized that regulatory approvals may be slower in some countries due to either domestic concerns or strategic export concerns pertaining to accessing GM-sensitive markets such as the EU. As we have seen, there would be substantial policing and dispute-resolution costs but few economic benefits associated with an FTAA stance that attempted to prevent strategic delays. For example, the fact that the EU market remains open to (officially) non-GM Brazilian soybeans is currently beneficial to Argentina and the United States in GM-tolerant markets because they face less competition.

Beyond simple regulatory cooperation, it may be tempting to take a minimalist approach and have an FTAA defer to other relevant authorities such as the SPS and TBT agreements and the BSP. Indeed, this minimalist approach currently seems to hold sway in the negotiations. As previously shown, however, these outside authorities are, at present, neither fully up to the tasks posed by biotechnology nor even mutually consistent. While these issues should ideally be addressed at the multilateral level, this may not happen in the context of the Doha Round of WTO negotiations since the SPS and the TBT agreements are not slated for discussion. A

more ambitious approach for the FTAA might be, therefore, to strive to provide interim clarification on three important issues. First, the FTAA could explicitly state that GM and non-GM varieties need *not* be treated as like products. This would deal with the hidden-quality problem and satisfy the *consumers' right to know* by allowing labelling under the provisions of the TBT Agreement. Second, FTAA members could agree to accept time limits on the use of the precautionary principle in the context of the BSP so that the valid short-run argument for precaution does not become an umbrella for long-term protectionism. Third, FTAA members could allow warranted short-term precaution with respect to new GM products by having exporting members agree to a temporary moratorium on the provisions of the SPS Agreement that require a scientific risk assessment. Since information is incomplete and risks are speculative rather than objective when a new GM-product is introduced, the information presupposed by a science-based risk assessment does not yet exist.

A minimalist FTAA approach to the intellectual property issues posed by biotechnology would be to simply defer to the TRIPS Agreement. In effect this would represent a low-level political equilibrium where the developing countries of the Western Hemisphere pretend that they are protecting intellectual property and developed counties pretend that appropriate biotechnologies are being created for developing countries. Evidently, it would be desirable to move beyond this status quo. Some steps, such as allowing special differential treatment for developing countries on the duration of patent and copyright protection, will undoubtedly have to await global reforms related to the TRIPS Agreement, but other steps might usefully be taken in the context of an FTAA. Clarification would be useful on patenting life forms. In return for their agreement to prohibit patents on landraces and wild varieties, which are not the outcome of innovation, developing countries within the Western Hemisphere might reasonably expect that an FTAA would provide measures to improve their access to existing biotechnologies and contribute to the development of more appropriate biotechnologies. For example, an FTAA could facilitate lower royalties for developing countries and promote capacity building in biotechnology. Further, to promote rather than constrain innovation to the benefit of all countries, limits might be placed on patents for isolated genes.

For Caribbean and Latin American counties other than Argentina, the proposed open trading regime in products of biotechnology for the FTAA offers negligible immediate net benefits. While currently there are few sensitive non-GM exports other than soybeans that are at risk there are also few appropriate GM products for these countries to produce at present. If the United States is serious about obtaining open

markets for GM products, the *quid pro quo* may be serious concessions on sensitive domestic products such as sugar and citrus fruits and juices. Similarly, Canada may have to contemplate concessions in poultry and dairy.

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Endnote

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