GMOS: CHUMPS OR CHAMPS OF INTERNATIONAL TRADE?

Darren Smits*
&
Sean Zaboroski†

I. INTRODUCTION

CORNCOBS OVER TEN FEET TALL and a parade of monarch butterflies in Seattle; pies in the face of international diplomats in Montreal; what's going on? The dawn of the 21st century is witnessing the coming together of globalization, technology, and agriculture. This intersection is proving to be much more than just a convergence, rather it has the potential to become a bloody battle.

Like an unbeaten prizefighter in its prime, capitalism stands unwaveringly ready to take on another challenger. Upon decisively defeating communism in the 1980s and globalization in the 1990s, capitalism's corporate and technological muscles are flexed. The next opponents are European consumers and the current regulations in place to manage the world's trade of agriculture. Capitalism is confident – perhaps over-confident – and assured that these opponents are weak and vulnerable. But these opponents are gaining support as more groups are joining their side of the battle. Neither side will go down without a fight. Let's get ready to rumble.

This paper is divided into three sections. The first section concerns the basis of the genetically modified organism (GMO) problem within international trade and reasons for the World Trade Organization's (WTO) failure to regulate international trade in GMOs effectively. The second section of the paper dissects the Cartagena Protocol on Biodiversity (CPB). This protocol is the United Nation's (UN) attempt to regulate the world trade of GMOs. The protocol seems to have raised more questions than it has answered, including why the protocol was needed, which products are covered by the protocol, how the protocol will be interpreted, and whether the protocol can be enforced effectively. Possible solutions to these questions will be explored. Finally, the third section of the paper takes a Canadian farmer's perspective regarding the GMO issue. The emergence of GMO technology has had an important

* Brownlee, Fryett.
† Aylesworth Thompson Phelan O'Brien LLP.

impact on Canadian agriculture. Because of the recent media coverage of GMOs, the world's agricultural marketplace may be at the dawn of significant changes and so the Canadian farmer's position in this changing marketplace must be examined.

A. What is a GMO?

One cannot turn on the television, listen to the radio, read a newspaper, or surf the internet without encountering somebody's view relating to GMOs.[1] Creating new species of crops or animals may seem like a late 20th century phenomenon but in reality food producers have been selectively bringing forth favourable attributes and breeding out unfavourable characteristics of plants and animals by natural selection for centuries.[2] However, this methodical process was significantly varied in 1973 (when the first cell was cloned) with the advent of genetic engineering.[3] The influence which genetic engineering had on agriculture was further accelerated with the introduction of the "Flavor Savor Tomato" (brighter shade of red, slower ripening) in 1992. The GMO industry delivered its first child and has not looked back.

GMOs are produced by introducing foreign deoxyribonucleic acid (DNA) into the cell of a plant or animal. This process occurs either through direct injection or by allowing bacteria to infect the cell. The cell which has had the foreign DNA introduced to it will exhibit the traits of the genes from the imported DNA; thus a new (or transgenic) species is created.[4] The term GMO does not apply to organisms that are modified by methods such as the injection of hormones, steroids, or antibiotics into an animal.[5] Thus, traditional agricultural techniques have included vertical or intraspecies modification while GMO science deals with horizontal or interspecies modification. An example of genetic engineering would be injecting peas with genes from salmon to make the peas more resistant to frost.

---

[1] Also known as genetically modified foods, genetically altered foods, frankenstein foods, franken foods, and transgenic species.

[2] S. Boensch Meyer, "Genetically Modified Organisms" (1998) Colorado Journal of International Environmental Law and Policy 102.

[3] Dr. A. Brule-Babel, Lecture "GMOs: Separating Facts From Fiction" (University Of Manitoba Showcase 2000: Agri-Food Research Fair 2 March 2000).

[4] S. K. Lewis, "Attack of the Killer Tomatoes? Corporate Liability for the International Propagation of Genetically Altered Agricultural Products" (1997) 10 Transnational Lawyer 153 at 156.

[5] *Ibid.*; Interview with Dr. Barry E. Prentice, Associate Professor, Department of Agricultural Economics (15 February 2000) University of Manitoba.

B. Pro-GMO Arguments

Proponents of GMOs argue that biotechnology could be the answer to many of the world's humanity and environmental problems. These potential benefits can be non-exclusively categorized into four advantages. First, there is a possibility that GMOs could replenish many of the world's scarce living resources. For example, there has been a steady depletion of the world's fisheries. Transgenic fish are now able to reproduce more readily and are more resistant to disease and weather changes which have decimated the population in the past.[6] GMOs could also be used to help decrease environmental contamination. Crops are currently being engineered to genetically repel weeds so that less herbicide, insecticide, and fungicide are required. Consequently, less pesticide will find its way into the air, soil, water, and the food that is consumed.[7] Third, GMOs are also viewed as an answer to world hunger problems. Experts have estimated that the world population will expand by 100 million people per year for the next 30 years.[8] Yet fertile land can only increase slightly and erosion affects much of the existing farmland. Biotechnology has the potential to increase the world's food production by creating heartier agricultural species that have more offspring, produce higher yields, and ripen faster.[9] Also, food could be engineered to have a higher nutritional or caloric value (i.e. functional foods) or could be enhanced with specific nutritional components. For example, rice has been genetically engineered to contain a higher concentration of beta-carotene that could be used to help prevent blindness, a particularly significant problem in impoverished regions where access to nutrition is limited. Finally, GMOs have the potential to be the answer to the current farm economic crisis. GMOs may be able to produce higher yields with easier crop maintenance requiring less costly pesticides. In addition, there is potential for local farm industries to make money through patents and participation in the discoveries and testing of new transgenic species.

---

[6] Lewis, *supra* note 4 at 158; F. Golden, "Make Way for Frankenfish: What Happens To These Ordinary Salmon If The Genetically Modified Lunkers Ever Get Loose?" *Time* (6 March 2000) 62.

[7] Prentice, *supra* note 5.

[8] Lewis, *supra* note 4 at 158.

[9] *Ibid.*

C. Anti-GMO Arguments

While promising tremendous benefits, GMOs also raise numerous concerns. First, there is the moral dilemma of tampering with nature. Are humans playing God? At the infant stage of GMO technology do humans really understand the consequences of what they are doing? Does the promise of profitable returns on investments blind humans to potentially devastating results? Second, the potential environmental impact of GMOs is unknown. GMOs could disrupt the ecosystem by generating species that are impervious to environmental defenses such as disease or harsh weather. Consequently, a transgenic species could enter and dominate regions, especially if it crosses borders where no tests have been conducted.[10] Also, there is the fear of unknown consequences of cross-pollination or unidentified effects on insects that consume transgenic crops. Third, the introduction of GMOs into a region has the potential to diminish genetic diversity. Once a product that is proven to be cheaper and/or produce a higher return enters the world market, more food producers will begin to grow that strain of crop. A loss of biodiversity could pose a worldwide ecological problem if only a few strains are relied upon. An illustration of the devastating lack of genetic diversity is the nineteenth-century Irish potato famine, where Ireland relied too heavily upon genetically uniform potato plants cultivated from just a few strains.[11] This danger is not unrealistic. In 1995 the first genetically modified canola was planted in western Canada. In 1998, just three years later, it has been estimated that as much as 70% of the canola fields in the western provinces were genetically modified.[12] Similarly, there could be significant negative economic impacts. Extensive GMO generation could wipe out major exports of developing nations. For example, some developing nations rely almost extensively on vanilla and high-yielding cocoa plants as exports. GMO science now enables these crops to be produced in countries that previously could not grow such crops.[13] The developed world could conceivably create environments to grow all types of crops (especially more lucrative crops) and thus diminish poorer countries'

---

[10] Lewis, *supra* note 4 at 160; John Grogan and Cheryl Long, "Lax Regulation, Hidden Ingredients, and a Plethora of Unknowns Make This Brave New Technology a Bad Bet" *Organic Gardening*, (January/February 2000) 4247.

[11] S. M. Dunn, "From Flav'r Sav'r to Environmental Saver? Biotechnology and the Future of Agriculture, International Trade, and the Environment" (1998) 9 Colorado Journal of International Environmental Law and Policy.

[12] Brule-Babel, *supra* note 3.

[13] Lewis, *supra* note 4 at 161.

comparative environmental advantage, which in many cases, is one of the few comparative advantages that they have. The developing world lacks the resources and technology to protect itself against agricultural export competition from developed countries that can conceivably compete anywhere with any product.

On a more micro level, "big business farms" could destroy family farms. Family farms may not be able to afford large-scale production costs and/or might lose autonomy to large-scale corporations.[14] Moreover, if farmers are able to produce higher yields at a lower cost it could have a negative economic impact as a greater and more consistent supply of crops would probably lower world food commodity prices. Conceivably, farmers' incomes may lessen even if they produce a superior product. Finally, there is the fear of unknown human health and safety risks with regard to GMOs. Even though the biotech industry and many government regulators have assured the public that there is no reason to worry, the fear of the unknown still exists. GMO science is in its infancy. The surface has barely been scratched. There have been no long-term empirical studies.

Compounding this issue is the fact that the majority of testing has been conducted on rats and other animals as opposed to humans.[15] Moreover, biotechnology companies themselves are responsible for conducting most of the testing. For example, Health Canada does not perform any independent research. Rather, biotech companies conduct research in accordance with governmental regulations. These same companies are now funding even the few independent testing agencies, such as universities.[16] It seems the kids are guarding the cookie jar.

II. THE BASIS OF THE GMO PROBLEM WITHIN INTERNATIONAL TRADE

A. The "Nature" Of The GMO Industry

The regulation of trade in agriculture is not stable even if the GMO issue is removed from the equation. A typical example of the uncertainty in world agricultural trade is the notorious Beef Hormone Dispute. For

---

[14] K. S. Beaudoin, "On Tonight's Menu: Toasted Cornbread with Firefly Genes? Adapting Food Labeling Law to Consumer Protection Needs in the Biotech Century" (1999) 8 Marquette Law Review 237.

[15] "Genetic Engineering: The Controversy," online: GMO Genetic ID Testing and Certification <http://www.genetic-id.com/prosncons/rightside.htm>.

[16] Interview with Dr. John Cranfield, Associate Professor, Department of Agricultural Economics and Farm Management (3 March 2000) University of Manitoba.

almost two decades the United States (US) and Canada have waged a bitter trade dispute involving the exportation of hormonally injected beef to the European Union (EU).

With the arrival of GMOs – a more aggressive agricultural manipulation, there is even less stability and more uncertainty regarding the implementation of regulations within agricultural trade. Undoubtedly, GMOs should be adequately tested regarding their health effects on humans and their possible negative effects on the environment; but the question remains, what degree of satisfaction will all interested parties require? The nature of the industry dictates that there are no easy cure-all answers. As referred to above, pro-GMO factions are satisfied that GMOs have been tested completely and conclude that in addition to being safe, GMOs can actually be used to benefit the world. In contrast, anti-GMO camps claim that the absence of tests regarding the long-term effects of GMOs on humans and the environment raise enough concerns that GMOs should be banned pending further testing.

Thus there is considerable uncertainty regarding where the regulations should be set. If governments pay too much attention to food safety to the point of overkill, GMO-dependent economies will suffer. In contrast, if governments are too lax, potential damage may be significant or even irreversible. In all decisions regarding regulations, costs and benefits are weighed against risk rather than risk being eliminated at all costs. Governments and international regulatory organizations, such as the United Nations (UN) and the World Trade Organization (WTO), must somehow strike this difficult balance.

Now that the DNA genie has been released, there is no feasible way to place her back in the bottle. GMO technology has become part of life and continues to progress at exponential rates. Governments and international organizations need to be able to address all interested parties' concerns and make prudent judgements. Piercing the rhetoric and looking objectively at the issues will be an integral part of enabling regulators to harness the rapidly advancing science adequately for the benefit of all. This objective is easier said than done as both pro-GMO and anti-GMO camps are passionately entrenched in their respective points of view.

There are many factors that create concerns about GMOs and how they are regulated. Significant differences of opinion between pro and con camps have created a public relations battlefield. As referred to above, the negative effects on the environment, the developing world's lack of resources to protect themselves against the trade of GMOs, intellectual property issues, and the moral dilemma of tampering with nature are just some of the important points to consider when dealing

with the international trade of GMOs. Many of these issues are intertwined into the following four broad concerns: existing national and cultural distinctions, different perceptions of safety, lack of trust with the existing testing procedures, and the problem of having multiple stakeholders.

B. The Four Concerns

1. National and Cultural Distinctions

Globalization of the agriculture industry is becoming more difficult to regulate. Competition between nations has become passionate as the international trade of agriculture has become more intense. Countries like Canada and the US have developed state of the art agricultural technology and are comparatively advantaged in the utilization of GMOs. The technology gap between the "have" and the "have not" nations continues to widen. Thus, part of the world has a vested interest in promoting the export of GMOs, and part of the world has a vested interest in banning the importation of GMOs. Compounding the problem is the fact that even before the advent of GMO technology the WTO experienced difficulty in regulating the use of even more novel agricultural technology. Now that GMO technology has progressed quietly into an increasing percentage of the fields in six of the major grain exporting countries, (known collectively as the Miami Group consisting of Canada, US, Argentina, Australia, Uruguay, and Chile) the problem of imposing fair, yet prudent, regulations has heightened dramatically.

Another angle to the problem of national differences is the diverse perceptions that different cultures have toward food. The European continent and several developing nations have had relatively recent (in some cases ongoing) wars on domestic soil. These wars have been associated with massive shortages of the essential elements of life, such as food. These tragedies entrench the importance of a reliable, safe supply of food in cultures. North America, on the other hand, has not had a major war on domestic soil for over a century. Also, the North American food system, although not perfect, has been fortunate not to have a major catastrophe such as the "mad cow" disease that plagued the EU's food system. A different attitude toward food has evolved between European and North American consumers. Many studies have

clearly demonstrated that Europeans are much more concerned about having a reliable, safe food supply than North Americans are.[17]

Also, on a more micro level, there are cultural differences that exist between nations regarding specific foods. A logistical problem inherent to any regulation that must be applied universally is that consumer attitudes toward risk and taste are culturally sensitive. For example, what may be an unsuitable way of making cheese (from unpasteurized milk) in France is conversely accepted in the Netherlands. The task of imposing uniform regulations to meet cultural norms is onerous.

2. Perceptions of Safety

Consumers are faced with risk in all aspects of life. All activities contain some element of risk. Whether one is driving a car, flying in an airplane, drinking alcohol, inhaling tobacco, consuming high fat food or living near hydro lines, risk is an inherent part of his or her activity. Every person makes judgements as to what level of risk is acceptable in order to achieve a certain perceived benefit. One's perception of safety is affected by a number of factors including who will be taking the risk, what the potential benefits for undertaking the risk are, what extent of potential damage is known, and who makes the ultimate decision regarding whether or not the risk is assumed.

Generally, consumers tend to consider food to be sacred. Consumers regard nutritional health risks much differently than other life risks such as air travel. Most people believe that food purchased at a market should not be tampered with. Most supermarkets are considered sanctuaries free from health and safety concerns. While consumers may accept a high-fat, fast food diet, scientific tampering of food is viewed differently. Consumers are more intolerant of health and safety risks derived from GMOs within their diet.

3. The Testing Procedures

Pro-GMO camps argue that countries which are the leaders in GMO technology have very rigorous food safety systems. This argument is weakened considering that in Canada private companies conduct health and safety testing according to governmental regulations. Obviously a situation with no independent testing and considerable profit potential

---

[17] A. McIlroy, "Canadians Wary of Genetically Altered Foods: Two-thirds of Consumers Surveyed Wouldn't Buy Clearly Labelled Food, Angus Reid Poll Finds" *Globe & Mail* (15 January 2000) A2.

screams out "conflict of interest!" Even if independent agencies are hired to conduct health and safety tests, credibility is lost when pro-GMO corporations fund the testing. This situation is not dissimilar to asking a fast food franchise to test the nutritional value of its hamburgers, or a cigarette manufacturer to be the only source from which consumers receive health assessments of cigarettes.

Even if it was accepted that GMO corporations which are carrying out the tests on GMOs have a considerable interest in conducting rigorous and independent tests for fear of liability, the fact that no real long-term tests have been conducted on humans still exists. Potentially significant negative consequences from certain products may remain dormant for a considerable time period before becoming apparent. The modern form of GMOs did not appear on supermarket shelves until the 1992 "Flavor Savor Tomato." In 1999 it was estimated that between 60-70% of the processed foods in Canada contained some GMOs. Realistically, GMOs have not been consumed long enough to fully realize the long-term consequences.

4. Multiple Stakeholders

Anti-GMO camps argue that large multi-national corporations are not moral creatures and, accordingly, cannot be trusted as being anything but completely self-serving.[18] In contrast, it is argued that these corporations have considerable interest in furthering the normalization of GMOs. There have been huge investments into research and development creating large expectations of the continued development and use of GMOs. These companies are widely held and are comprised of many shareholders with considerable financial and political clout. Realistically, when most shareholders assess these GMO companies' performances they will be unsympathetic to moral and ethical issues. Shareholders will expect the directors of these companies to make appropriate technical and marketing decisions to normalize GMOs and thus drive up the share price. If one of these companies were to fall behind its competitors regarding GMO advancement, Wall Street and Bay Street would vote with swift and unforgiving economic force. The nature of the agri-science industry dictates that all corporations move similarly and in the same direction or market forces punish them.

In addition to multinational corporations, the Canadian government, provincial governments, many Canadian farmers, and food processors also have financial interest in seeing GMOs normalized and accepted.

---

[18] E. Luttwak, *Turbo Capitalism: Winners and Losers in the Global Economy* (London: Weidenfield & Nicolson, 1998)at xi.

As suggested above, GMOs are promoted to reduce production costs, create efficiencies, enhance yields, and generally be more profitable than non-GMO products. Because Canada is a net exporter of agriculture there is great financial pressure to advance GMOs. In other words, there is little financial incentive to curb the promotion of GMOs. Realistically only a considerable crisis, either associated with trade, health, safety, or public relations, will motivate stakeholders to turn away from GMOs. Until that time, it is probably safe to say that the pursuit of the normalization of GMOs will increase.

C. Overview of International Trade

The opening of the global marketplace, as a result of the fall of the Soviet economic trading bloc in 1989, has led to the growing prominence of international trade. This trend spawned the General Agreement on Tariffs and Trade (GATT) and, its subsequent replacement in 1995, the World Trade Organization (WTO).

As of 1999 the WTO consists of 134 member countries with most of the rest of the world serving as observer countries. The WTO's agenda is to create a multilateral trading system that serves to reduce, or perhaps even eliminate, tariffs and other barriers to trade. One of the main components of this system is the concept of the most favoured nation (MFN) status, which requires a country to treat all other countries in a manner equal to the way in which the most favoured nation is treated. One exception to MFN status is that regional agreements, such as the North American Free Trade Agreement (NAFTA), can exist and can allow more favourable trade between parties to these agreements than to those outside of the agreements. For example, Mexico (a party to NAFTA) is able to give Canada (a party to NAFTA) a banana trade deal that is superior to the deal it gives Germany (who is not a party to NAFTA).

The WTO has become increasingly successful in advancing a mandate of reducing worldwide tariffs and quotas and transforming the world to a "freer trade marketplace." However, the breakdown of observable tariffs and quotas has led to a growing proliferation of more subtle forms of trade protectionism. In other words, trade has become more creatively protected by the utilization of more familiar regulations in the form of health, safety, and human rights. For example, instead of countries being accused of protecting domestic industries through the use of tariffs and quotas, countries are now being accused of raising health concerns with imported products when their true intention is to

aid domestic producers in the face of international competition.[19] It is the motivation behind many of these commonplace barriers that has been disputed. This is not to suggest that all of these barriers have been erected for the purpose of subtle trade barriers rather than for more sincere altruistic intentions. However, it would not be difficult to argue that in a significant number of cases, barriers were erected as a weapon of trade rather than a shield of genuine health or safety protection.[20]

In order to control and enforce its policies, the WTO has a dispute resolution mechanism. This system continues to become more sophisticated as more case law is being accumulated. The WTO regulates trade in agricultural products through a special set of regulations called the Agreement on the Application of Sanitary and Phytosanitary Measures (SPS Agreement). The SPS Agreement sets out general rules relating to animal and plant health standards for agricultural products. The WTO itself does not publish an accepted code of standards. Instead, countries are allowed to set their own standards, but these standards must be based on "accepted scientific principles." Countries are only supposed to apply these standards to the extent necessary to protect human, animal, or plant safety. Under the WTO, the SPS restrictions are prohibited from being used as weapons in trade. Also, the SPS standards must be applied uniformly and with the same vigour to all imports regardless of their origin, as well as to domestic agricultural production. The SPS Agreement functions to eliminate possible advantages whether in favour of domestic suppliers or among foreign suppliers. Thus, while countries have sovereign rights over the level of health protection, these standards must be uniformly applied and must be based on scientifically sanctioned health and safety reasons; strategic trade barriers are prohibited.[21]

When a country's food safety, animal, or plant health standards are not justified by scientific evidence, governments may formally challenge them. SPS regulations explicitly allow governments to impose more stringent requirements than scientific international standards. Where countries have not, however, based their criterion on internationally approved standards, they can be forced to provide justification for their criterion if the difference leads to a trade dispute. For example, the importing country has the onus to prove that hormonally injected beef

---

[19] M. J. Trebilcock & R. Howse, *The Regulation of International Trade* (London: Routledge, 1999) at 135-137.

[20] *Ibid.*

[21] "Understanding the WTO Agreement on Sanitary and Phytosanitary (SPS) Measures," (May 1998), online: World Trade Organization <http://www.wto.org/english/tratop_e/spsund.htm>.

is dangerous[22] but this justification must be based on a thorough analysis of available scientific data and the hazards involved."[23]

A problem with the SPS Agreement is that it does not always have sufficient potency to adequately regulate trading disputes. The ongoing Beef Hormone Dispute is a classic example. In the late 1970s the EU restricted hormonally injected beef imports from the US and Canada because of the alleged "uncertainty of the scientific evidence of the safety of the product."[24] Canada and the US argued that the fears of hormonally injected beef lacked scientific merit and were, therefore, not acceptable under the SPS guidelines. The WTO agreed and ruled in favour of allowing the imports. Despite the WTO decision the EU refused to allow the imports stating that consumer rights should supersede the SPS Agreement. Canada and the US subsequently retaliated with 100% tariff quotas on beef imported from the EU. The trade war continues today.

D. GMOs, Canada and International Trade

Similar to hormonally injected beef, GMOs, with their precarious health and safety reputation and technically complex nature, have been a particularly likely target for governments in imposing trade barriers. Countries are able to cite health and safety concerns for rejecting the importation of GMOs. As a result, disputes about GMO trade restrictions are currently adjudicated according to the WTO rules.[25]

The use of health and safety barriers to protect trade in agricultural products is particularly important for Canadian food producers. Canada is considered a global leader in GMO research and technology. A significant percentage (10% of the Canadian crop in 1999)[26] of Canadian agriculture is genetically modified. Consequently, Canada has accumulated a considerable comparative advantage over other large agricultural producers, such as the EU countries which had virtually no GMO production in 1999.

E. Why Did The WTO Fail To Effectively Regulate GMOs?

Undoubtedly, the WTO had ample opportunity to address the GMO

---

[22] *Lewis, supra* note 4.

[23] S*upra* note 21.

[24] Cranfield, *supra* note 16.

[25] Lewis, *supra* note 4.

[26] J. Papanikolaw, "Biosafety Protocol Receives Mixed Reception From Agricultural Groups" *Chemical Market Reporter* (7 February 2000) 4.

issue as it gradually grew into its prominence in the early 1990s. However, the WTO's political will and ability to regulate such a contentious issue has been continually questioned. At a meeting in Seattle in late 1999, the WTO declined to set forth a new set of trade talks regarding the GMO issue and even refused to give the GMO issue any special consideration or status. The strain between major GMO exporters (the Miami Group) and the alliance of a significant portion of the rest of the world (particularly the EU) lead to major tension in the WTO. Because of the entrenched stance both sides took in this issue, the WTO was threatened with a breakdown.[27]

Presumably the WTO shied away from directly addressing the GMO issue because it had already demonstrated a "lack of teeth" in trying to resolve controversies such as the Beef Hormone Dispute. Relative to the Beef Hormone Dispute, the GMO issue is even more hotly debated and the stakes have risen immensely. On the one hand, the Miami Group wants to maintain its stranglehold on the world's grain export. On the other hand, the EU has demonstrated a willingness not to back down even when faced with onerous retaliatory sanctions. It is clear that the WTO has no mandate to take on the GMO issue and any attempts in the past have proved futile. Accordingly, the issue of GMO regulation must be decided elsewhere.

The task was left to the UN and the January 2000 Bio-Safety Convention in Montreal where more than 130 nations adopted the first treaty regulating international trade in GMOs. The treaty, known as the "Cartagena Protocol on Biosafety" (CPB), is named after the city Cartagena, Columbia, where the first attempt at a global GMO treaty in 1999 fell apart due to opposition from the Miami Group. The CPB is an outgrowth of the Convention on Biodiversity created during the 1992 Earth Summit in Rio de Janeiro.[28]

---

[27] F. T. McCarthy, "Caution Needed: A Protocol on Trade in GMOs" *The Economist* (5 2000)(pagination unavailable).

[28] D. Knight, "Biotechnology : Critics Fear New Treaty Could Be Weakened" *Inter Press Service* (1 February 2000) (pagination unavailable); D. Palmer, "Countries reach landmark GMO food agreement;" "US Loses Battle Over GE Foods in Montreal;" "Frankenfoods Will Begin to be Regarded in Global Commerce;" "Green Groups Applaud Int'l Bio-safety Trade Pact," online: Organic Consumers Association & Biodemocracy <http://www.purefood.org/ge/montrealge.htm>.

III. INTERPRETATION OF THE CARTAGENA PROTOCOL ON BIOSAFETY (CPB)

A. Basic Questions

1. What is this Protocol?

Basically, the Cartagena Protocol on Biosafety is an attempt to balance trade concerns with the environmental and health concerns of five conflicting groups. At one end of the spectrum sits the Miami Group (Argentina, Australia, Canada, Chile, the US, and Uruguay) which is opposed to most GMO regulations. At the other end of the spectrum is the EU who is increasingly motivated to regulate, control, or even eliminate GMO production and trade. There are also three camps that reside interchangeably in the middle of the spectrum. The Like-Minded Group (comprised of the majority of developing countries), the Compromise Group (Japan, Mexico, Norway, Singapore, South Korea, Switzerland, and New Zealand), and the Central and Eastern European bloc of countries.[29]

The CPB is an attempt to establish a framework for standardized rules that are to be applied to GMOs. In summary, the mandate of the CPB is to provide an "adequate" level of protection from GMOs, thereby preventing potential harm to the environment. Also, these rules are to take into account the risks to human health.[30] The protocol has many weaknesses and ambiguities. For example, the protocol does not define what an "adequate" level of protection is. Is this a little protection, more than before, or a complete shield against any harm? Also, the protocol does not clarify what "taking into account" entails. Does a country have to consider with absolute certainty, or can they just consider the consequences? Obviously, there are several issues in need of clarification and interpretation.

2. When Does the Protocol Come into Effect?

The protocol is not yet in effect. The CPB will come into force when 50 of the countries that agreed to the protocol in Montreal, sign the treaty. While the protocol will be available to be signed until 4 June 2001,[31] it is estimated that it could be much longer before enough countries sign on. In fact, it is estimated that it will take at least two years, possibly even three years, before the 50 signatures are

---

[29] Personal electronic correspondence from C. Kinzel to authors, "The Cartagena Protocol on Biosafety: An Analysis of Results" *Genetic ID* (11 March 2000).

[30] *Cartagena Protocol on Biosafety* (CPB), Article 1: Objective; similar reference made in the CPB, Preamble.

acquired.[32] There are two significant reasons why the protocol should have been made enforceable much sooner. First, countries are not bound by the agreement until the 50 signatures are acquired. While the parties came to a common understanding during the Montreal negotiations that they will abide by the spirit and objectives of the Protocol until the 50 signatures are gathered,[33] a common understanding is not enforceable in international law. For instance, there is nothing stopping a particular country, which agreed to the protocol, from acting contrary to the protocol before the 50th signature is secured. Second, GMO technology is progressing at an incredibly rapid pace. If regulations are to keep pace with technology they must be in place to be proactive and not continually trying to react to developing issues. Keeping pace with the changing nature of the technology will be a difficult challenge for regulators. Waiting three years before comprehensive, enforceable regulations come into place is too long. In three years the GMO industry will undoubtedly be materially different and the protocol may be inapplicable and useless.

The protocol has some flexibility because it contains a clause that, once it comes into effect, it is to be assessed every five years to determine how effective it is in dealing with GMOs.[34] Continuously assessing and updating the protocol is important, but revisions need to be done more often than once every 5 years. It cannot be stressed enough that regulations need to keep pace with changing technology.

3. What Does the Protocol Apply to?

The CPB does not apply to everything that could ultimately be classified as a GMO. The CPB only applies to living modified organisms (LMOs). According to the CPB, LMOs are more narrowly defined than GMOs. LMOs include organisms that possess a combination of genetic material obtained through the use of "modern biotechnology." The protocol defines modern biotechnology as either being a direct injection of foreign DNA[35] or a fusion of cells.[36] Accordingly, LMO under the

---

[31] *CPB*, Signature: Article 36.

[32] Knight, *supra* note 28.

[33] "GreenPeace International: Summary of the Cartagena Protocol on Biosafety," online: GreenPreace International <http://www.greenpeace.org/~geneng/highlight/bio/dailyupdatem9.htm>.

[34] *CPB*, Assessment and Review: Article 56; CPB, Signature: Article 36; CPB Entry Into Force: Article 37.

[35] *CPB*, Use of Terms: Article 3, para. (i).

[36] *CPB*, Use of Terms: Article 3, para. (i); (ii).

protocol, does not apply to the "old techniques" used in natural breeding and selection. [37] These traditional techniques do not include modification by directly injecting foreign DNA into a cell or by direct manipulation of the DNA. Therefore, the protocol does not apply to organic agriculture or to products manipulated through natural breeding methods regardless of the amount of pesticides, steroids, or hormones used. Also, the protocol states that it does not apply to LMOs that are pharmaceutical in nature and which are addressed by other international regulations or organizations.[38] Finally, the CPB does not apply to processed products, even if the ingredients within the product are GMOs.[39] This exception was left out of the protocol because the Miami Group and the EU were too far apart from any sort of agreement as to how these products should be addressed. Presently, the EU has proposed a threshold of one percent of GMOs to be allowed in processed food. Clearly this percentage is significantly lower than the Miami group is prepared to agree to.[40] A one percent threshold is almost impossible for some food products to guarantee. For example, honey produced in Manitoba would be faced with significant logistical obstacles in trying to meet this threshold. There is a high concentration of canola fields located in the province (approximately 70% of the canola fields in Manitoba) grown through genetically modified processes,[41] and bees simply cannot be confined.

Excluding processed products from the umbrella of the CPB creates a significant and notable loophole for exporters. If an exporter encounters a trade barrier at an importer's border, they could choose to process the GMO product domestically before exporting. For instance, a genetically modified tomato could be canned or canola could be processed into oil in order to circumvent the protocol.[42]

B. Major Components of the Protocol

1. Appropriate Testing

For the first time in international trade, the exporter has explicitly been given the onus of ensuring that all of the export products have undergone appropriate testing based upon accepted scientific principles. According to the protocol, the exporter is responsible for

---

[37] *Ibid.*
[38] *CPB*, Pharmaceuticals: Article 5.
[39] Papanikolaw, s*upra* note 26.
[40] Cranfield, *supra* note 16.
[41] Brule-Babel, *supra* note 3.
[42] Cranfield, *supra* note 16.

adequately testing the product for one complete life cycle.[43] In other words, scientific observations are to be performed for as long as the crop's or animal's life period extends, from gestation to death.

In light of the concerns and potential risks of GMOs, this test seems to be inadequate. For example, if a GMO has a life cycle of five months, it could be developed, planted, be placed on the market and exported by the sixth month. Realistically, this time period is far too short. The protocol would serve as a more effective regulation if the testing period were considerably longer.

2. The Precautionary Principle

If the importing nation is unsatisfied with the testing of the LMO, the importing country may prevent the import of an LMO based upon the "precautionary principle."[44] This principle allows a country to reject the import of an LMO on the grounds that the exporting country has not proved the safety of the product. In other words, if there is a legitimate concern for the environment or the health of its citizens, a country can prevent the importation of the LMOs, even if there is no clear scientific proof that they pose a danger to the environment or to human health.[45] The importer can rely on the "better safe than sorry" approach.[46]

The precautionary principle allows a country to compare the amount of risk to the costs of action to determine what actions to take.[47] In practice this will give a government a fair amount of discretion in setting policies regarding domestic, environmental, and health concerns. But the precautionary principle will also empower countries to prevent legitimate trade. This can be done by fraudulently disguising strategic trade barriers through the utilization of the precautionary principle. This technique will allow a country to conceivably circumvent other established trade agreements.

The precautionary principle directly contradicts the SPS regulations (which are clearly upheld in the Beef Hormone decision of the WTO). According to SPS the importer has the onus to demonstrate that there is ample scientific proof before imports will be disallowed. Under the CPB

---

[43] *CPB*, Risk Management: para. 4.

[44] *CPB*, Preamble. This is an adoption of Principle 15 of the Rio Declaration on Environment and Development.

[45] *CPB*, Decision Procedure: Article 10, para. (6); Knight, "Biotechnology : Critics Fear New Treaty Could Be Weaken."

[46] Cranfield, *supra* note 16.

[47] Kinzel, *supra* note 29.

the exporter must prove, to the satisfaction of the importer, that the product is safe.

3. Internet-Based Biodiversity Clearing House

All parties to the protocol are responsible to contribute to an Internet-Based Biosafety Clearing House. Countries are required to publish all decisions regarding whether or not they are willing to accept imports of specific LMOs. The common internet site will also function to facilitate the exchange of scientific, technical, environmental, and legal information.[48]

What the site will do is enable an exporter to research a country's position regarding a specific LMO import. If a recipient country lacks the capability to adequately assess the risks of an LMO on its own, the country could investigate the internet site for relevant information. The internet site could also be used to aid in the education and understanding of international laws and conventions regarding LMOs. For example, guidelines on how to interpret the CPB should be posted at that site. At this time, it is not clear how the site is to be controlled and regulated to prevent false or erroneous information from impairing the effectiveness of the site.

4. The Advanced Informed Agreement (AIA)

The CPB also established the Advanced Informed Agreement (AIA). According to the AIA, exporting countries are to make their intentions known to importing countries. In other words, they are to indicate that they intend to export a specific LMO in advance of actually doing so. The aim of the AIA is to ensure that recipient countries have both the opportunity and the capacity to assess the potential risks of an LMO, before it is imported into their country.[49] The importing country can, if it desires, decide to exempt itself from receiving such information.[50]

The protocol provides for two different approaches to AIA procedures, depending upon the purpose of the LMO. LMOs that are intended for "intentional introduction into the environment"[51] (such as seeds or live

---

[48] *CPB*, Decision Procedure: Article 20, para. (1)(a).

[49] "Global treaty adopted on genetically modified organisms" (29 January 2000), online: Clearing-House Mechanism <http://www.biodiv.org/press/pr-2000-01-28-biosafety.html>.

[50] *CPB*, Simplified Procedure: Article 13.

[51] *CPB*, Application of The Advanced Informed Agreement Procedure: Article 7 para. 1 – states that Articles 8-10 and 12 Apply.

fish)[52] are to be treated strictly within the CPB guidelines. The protocol requires that the exporter provide detailed information to each importing country, in advance of the first shipment, regarding the LMO and its potential impact.[53] The exporter has a legal obligation to ensure that the information given to the importing country is accurate.[54]

Explicit consent from the importing country is required before transboundary movement can occur. The importing country then has 90 days to acknowledge receipt of the notification.[55] Upon receipt of the notification, the importing country has 240 days to make a decision whether to approve the import (with or without restriction), prohibit the import,[56] ask for more information about the import, or ask for more time to make a decision. If the importer fails to give an answer within the time limit, consent is not to be implied.[57]

A second, and more relaxed, set of procedures applies to LMO imports that are intended for direct use as food, feed, or processing (FFP).[58] Popular examples of such commodities are genetically modified wheat, canola, tomatoes, corn, and soy. Presently, this category is very significant as these commodities make up a large percentage of world GMO trade. It is estimated that 54% of the world's soybeans, 28% of the world's corn, and 9% of the world's canola are genetically modified.[59] Soybeans and corn together account for approximately 90% of the world trade of GMOs.[60]

Initially the Miami Group wanted to exempt these commodities from the CPB. The Miami Group claimed that these commodities would not have an effect on biodiversity because they are not intended to be released into the environment. In response, the EU argued that there is no way to ensure that these commodities will not be released into the environment.[61]

---

[52] *CPB*, Application of the Advance Informed Agreement Procedure, Article 7, paras. (1), (2); S*upra* note 49.

[53] *CPB*, Notification: Article 9, para. 1; S*upra* note 33.

[54] *CPB*, Notification: Article 8, para. 2.

[55] *CPB*, Acknowledge of Receipt of Notification: Article 9, para. 1.

[56] *CPB*, Decision Procedure: Article 10, para. 3(b).

[57] *CPB*, Decision Procedure: Article 10, para. 5.

[58] *CPB*, Application of the Advance Information Agreement Procedure: Article 7, para. 3. Article 11 applies to transboundary movement of LMO destined for use as food or feed, or for processing. ; *CPB*, Procedure for Living Modified Organisms Intended For Direct Use As Food Or Feed, Or For Processing, Article 11.

[59] Papanikolaw, *supra* note 26.

[60] McCarthy, *supra* note 27.

[61] Kinzel, *supra* note 29.

A compromise was reached. According to the CPB, the exporter does not have to provide notification of the intention to export an LMO intended for FFP. Rather, the exporting country is required to post information that they "may" export an LMO intended as FFP on the Internet Biosafety Clearing House site. [62] The posting is required within 15 days of making the decision to export. This requirement does not apply to field trials.[63] Each importing country is required to make its decisions regarding LMOs intended for FFP known by posting its decisions on the Biosafety Clearing House site.[64] Again, the failure to provide such information does not imply consent.[65]

The problem with having two different requirements for LMOs, depending on their intended use,[66] is that it may prove to be virtually impossible to keep the two separated. In practice, making a distinction between the two intentions will be extremely difficult. For example, grain can be used interchangeably as seed, food, feed, or processing.[67] Clearly this requirement needs further clarification.

There is uncertainty regarding how LMOs destined for contained use are to be treated. According to the protocol, "contained use of LMOs" does not mean that the LMOs have to be "prevented" from coming into contact with the external environment.[68] Rather, the definition of "contained use" requires that LMOs be "effectively limited" from contact with the external environment,[69] a looser standard that could create another loophole for exporters. LMOs that are intended for destination inside a physical structure or barrier, such as a fenced field, could be excluded from the AIA. Therefore, if a country wants to avoid informing other countries of its intention to import LMOs, for fear of rejection, they could label the import as destined for "contained use."

---

[62] *CPB*, Procedure for Living Modified Organisms Intended for Direct Use as Food or Feed, Or For Processing: Article 11, para. 1 ; S*upra* note 33.
[63] *CPB*, Procedure for Living Modified Organisms Intended for Direct Use as Food or Feed, Or For Processing: Article 11, para. 1.
[64] *CPB*, Procedure for Living Modified Organisms Intended for Direct Use as Food or Feed, Or For Processing: Article 11, para. 5.
[65] *CPB*, Procedure for Living Modified Organisms Intended for Direct Use as Food or Feed, Or For Processing: Article 11, para. 7.
[66] *CPB*, Application of the Advance Informed Agreement Procedure: Article 7, para. 2.
[67] *Supra*, note 33.
[68] *CPB*, Use of Terms, Article 3(b); *Supra* note 49.
[69] *CPB*, Use of Terms, Article 3(b).

Similarly, the AIA does not apply to LMOs that are "not likely" to have an "adverse effect" on biodiversity or human health.[70] An importer can still reject the LMO shipment, but if it is not likely to cause any harm the importer does not have a right to be informed about such an import in advance.

In summary, the AIA Article of the protocol seems to contradict the rest of the underlying purpose of the CPB. Most LMOs can be proven to be "likely" to cause an "adverse effect." Thus, the importing country has been given the authority of the "precautionary principle." Another potential loophole may exist though, as there is the potential for exporting countries to use this clause and refuse to apply the AIA because their LMOs are "not likely" to cause an adverse effect.

5. Labelling

The CPB sets out international rules for the packaging and identification of LMOs.[71] The intention behind the identification of LMOs, through labelling and segregation, is to ensure traceability. Traceability will allow importing countries to track the movement of LMOs crossing their borders. Also, labelling will allow nations to take appropriate security measures in the event of unauthorized imports, accidents, or unintentional release into the environment.[72] Labelling will also permit consumers and food producers to exercise choice over the selection of LMOs.[73]

The CPB sets out differentiated rules for the identification of LMOs, based upon their usage. First, if the LMO is intended for direct use as food, feed, or processing, the exporting country must identify shipments of transgenic commodities as "may contain living modified organisms." Also, the label is to identify that this particular LMO "is not intended for intentional introduction into the environment." Finally, a contact point for further information regarding the specific GMO must also be provided.[74]

The protocol states that more detailed labelling requirements will be introduced two years after its implementation, following a further round

---

[70] CPB, Application of the Advance Informed Agreement Procedure: Article 7, para. 4.

[71] CPB, Handling, Transport, Packaging and Identification: Article 18.

[72] S*upra* note 33.

[73] *Ibid.*

[74] *CPB*, Handling, Transport, Packaging and Identification: Article 18, para. 1(a).

of negotiations.[75] Accordingly, it could take over four years for further clarification on the labelling requirements of LMOs.

Second, if LMOs are destined for contained use or intentional introduction into the importing country's environment, they are to be clearly identified as living modified organisms. The label must include any specific requirements for safe handling, storage, transport, use, and a contact point for further information.[76]

6. Relationship With Other Agreements

The protocol says little regarding its interpretation alongside other international trade agreements, including those under the WTO. Will it be superior or subordinate to other agreements? While nothing in the main body of the protocol indicates how it should be interpreted, the preamble states that the protocol is to be mutually supportive, not subordinate to other international agreements.[77] Legal precedent holds that language contained in the preamble is not generally considered binding, but is only relevant for interpreting the rest of the protocol. Therefore, the legal strength of the protocol, subject to other international agreements, remains unclear.

If the protocol is interpreted as being subordinate to other trade agreements it may be sterilized by the WTO settlement procedures, specifically the SPS regulations. Another scenario could be that the WTO would disregard the protocol entirely as it is a UN document as opposed to a WTO document.[78] If the protocol is given equal or superior status to the SPS regulations it could be followed and the existing WTO rules could be sterilized. The resolution of this question is central to the regulation of GMOs and will be subsequently discussed in detail.

C. Minor Components of the CPB

1. Socioeconomic Impact

The CPB states that when countries make decisions they must keep in mind the socioeconomic impact their decisions will have upon other countries.[79] For instance, as previously mentioned, vanilla and high-

---

[75] *Ibid.*

[76] *CPB*, Handling, Transport, Packaging and Identification: Article 18, paras. 1(b) and 1(c).

[77] *CPB*, Preamble.

[78] Knight, *supra* note 29.

[79] *CPB*, Socio-Economic Considerations: Article 1, para. 1.; similar reference found in Preamble and Article 20(1)(b).

yielding cocoa plants can now be produced in countries that could not previously grow such plants. If a country's export of genetically modified vanilla or cocoa will have a detrimental impact on another country's socioeconomic conditions, the exporter must take these potential effects into consideration. Obviously suggesting moral obligations be considered is a far cry from imposing legal obligations to consider. Also, what in fact needs to be considered is unclear and there are no provisions of enforceability specified if there is a flagrant disregard for the potential socioeconomic impacts.

2. Bilateral, Regional, and Multilateral Agreements

The parties to the protocol are free to enter into other agreements regarding the transboundary movement of GMOs. These outside agreements can be with parties that have either signed or not signed the protocol,[80] but such agreements cannot be inconsistent with the protocol. Outside agreements will be considered inconsistent if they offer a level of protection that is lower than that provided for under the CPB.[81] Any side agreements are to be conveyed to the other countries through a posting on the Internet Biosafety Clearing House.[82]

3. Informed Public

Each party to the protocol is to promote public education and awareness.[83] In addition, each party is to consult the public before making a decision to allow or disallow an import and is to make the results of such decisions available to the public.[84] This clause is a very important element of the protocol because many consumers are ill informed, and consequently, unable to make proper decisions. Currently, the logistics and practicality of this requirement are unclear.

---

[80] *CPB*, Non-Parties: Article 24, para. 1

[81] *CPB*, Bilateral, Regional and Multilateral Agreements and Arrangements: Article 14, para. 1; *CPB*, Non-Parties: Article 24, para. 1

[82] *CPB*, Bilateral, Regional and Multilateral Agreements and Arrangements: Article 14(2); CPB, Non-Parties: Article 24, para. 2.

[83] *CPB*, Public Awareness and Participation: Article 21, para. 1(a).

[84] *CPB*, Public Awareness and Participation: Article 21, para. 1(b).

4. Liaison

Each country is to appoint a liaison to be responsible for dealing with the protocol secretariat.[85] Each party is to pay for its own liaison and contribute to the payment of the secretariat.[86] Also, each country is to give at least one person the responsibility of making sure that his or her country complies with the protocol. This stipulation may prove to be effective, as each country to the protocol must have individual appointees who will be responsible and knowledgeable about GMOs and their regulation.

5. Sovereignty

The protocol is not to affect a country's control over its domestic waters, ships, aircraft, and its continental shelf. It is felt that such regulations are to be set out by the sovereign state and are to be in accordance with international law.[87]

6. Observers

Any country that is not a party to the protocol can be admitted as an observer unless 1/3 of the parties object.[88] This provision is significant because the world's largest GMO grain exporter, the US, is not a party to the protocol. The US's treatment (or mistreatment) of the agreement will be a critical determinant for the future of the protocol. Appropriately, it is prudent that the US not be required to cross over difficult hurdles if it wants to become a party to the agreement.

7. Illegal Transboundary Movements

Illegal transboundary movements of GMOs are also covered by the protocol. Both the importer and the exporter must adopt appropriate measures aimed at preventing the transboundary movement of LMOs that are inconsistent with the protocol.[89] Any movements that are inconsistent with the protocol are deemed to be illegal[90] and are to be

---

[85] *CPB*, Competent National Authorities and National Focal Points: para. 1.
[86] *CPB*, Secretariat: Article 31, para. 3.
[87] *CPB*, General Provisions: Article 2, para. 4.
[88] *CPB*, Conference Of The Parties Serving As The Meeting Of The Parties: Article 29, para. 8.
[89] *CPB*, Illegal Transboundary Movements: Article 25, para. 1.
[90] *Ibid.*

posted on the Internet Biosafety Clearing House.[91] The innocent party may request the offending party to pay, retrieve, or destroy the GMOs at its own expense.[92] Currently, there is no liability agreement. Thus, in the event of a spill the injured party only has the power to request that the illegal exporter clean up its mess. If the offender does not want to act to rectify the problem, it cannot be forced through legal means.

D. Issues to be Considered at a Later Date

1. Liability

The CPB sets out an obligation for the parties to subsequently develop appropriate international rules for holding exporters responsible for any damage that their LMOs may cause.[93] The parties have agreed that they will attempt to accomplish this task within four years.[94] Currently, there is no international agreement on how liability will be dealt with. In other words, it is uncertain whether an exporting country, company, or individual could be held liable for damages caused. Also, there are no indications regarding how liability will be measured. Will the legal standard of liability be that the specific GMO caused damage based on a balance of probabilities, or a higher standard? Much clarification and interpretation is needed.

2. Risk Assessment

The protocol states that exporters are to assess the risks of their exports using scientifically sound procedures. This information is to be provided to the importing country, where applicable. Yet, the protocol does not establish any sort of risk assessment criteria other than that it be based upon the "precautionary principle." Once the protocol is ratified all signing parties shall decide upon appropriate procedures and mechanisms to facilitate decision making by importers.[95] This issue may yet prove to be the most contentious concern. An agreement on this issue will be very difficult to establish. Without standardized criteria regarding risk assessment, countries can readily reject LMO imports citing precautionary reasons and exporters will not have any concrete guidelines to follow.

---

[91] CPB, Illegal Transboundary Movements: Article 25, para. 3.
[92] CPB, Illegal Transboundary Movements: Article 25, para. 2.
[93] CPB, Liability and Redress: Article 27.
[94] *Ibid.*
[95] *CPB*, Acknowledgement of Receipt of Notification: Article 9, para. 7.

3. Segregation Not Addressed

The protocol does not set out a specific requirement for the outright segregation of GMO and non-GMO products[96] and the protocol does not state that this issue is to be dealt with in future meetings. This issue will surely arise as the labelling requirements may ultimately have the effect of forcing producers to segregate GMO commodities. Logistically, segregation will be very difficult to achieve. There is no existing infrastructure to accommodate two segregated agricultural systems. At minimum, two sets of storage systems and transporting systems will be necessary so that the natural crops do not come into contact with remnants of genetically modified crops. Seemingly the existence of two separate systems is the only way to ensure that there is in fact true segregation.

4. Lack of a Dispute Settlement Mechanism

An importing country can change its decision on whether or not to allow an import if the decision is based upon new scientific evidence.[97] Also, the exporter can request an importing country to review its rejection decision if there is a change in circumstances or new scientific evidence becomes available.[98] The importing country is required to respond, and set out reasons for its decision, within 90 days.[99]

These provisions are the extent of the dispute settlement mechanism contained in the protocol. If an importing country rejects an LMO, the exporter can only request that the importer reassess the decision if new evidence becomes available. This provision does not seem to be very effective.

Clearly an effective dispute settlement mechanism is crucial to the effectiveness and survival of the CPB. If disputants are forced to go to an outside source of help to reach a settlement it will have a negative impact on the protocol and lead to its degradation. It will not be considered a binding international instrument. If an outside source is making determinations as to interpretation, or even disregards the protocol, the CPB will undoubtedly lose credibility.

If a dispute arises over the protocol it will most likely go to the WTO for resolution. Obviously, the interpretation of the protocol will then be subject to the decisions of the WTO. This situation raises numerous

---

96 Papanikolaw, *supra* note 26.
97 *CPB*, Review of Decisions: Article 12, para. 1.
98 *CPB*, Review of Decisions: Article 12, para. 2.
99 *CPB*, Review of Decisions: Article 12, para. 3.

questions including why the WTO did not deal with the issue prior to the protocol and if the protocol is not to be used to circumvent other trade agreements, then what its purpose is.

E. Was the CPB a Compromise?

Notwithstanding the general positive response that most pro and anti-GMO groups expressed following the CPB agreement, it is possible that the CPB has been set up as nothing more than an impotent compromise. Seemingly, the diverseness of the issue and the important ramifications that the GMO issue has for international trade, has dictated that the UN has also failed to deal with the issue to the extent that the regulations of this issue warrant.

Generally, the EU and the rest of the anti-GMO allies receive the imposition of a "precautionary principle" which states that potentially dangerous imports can be restricted or prohibited based on a belief before they are scientifically proven. In addition, anti-GMO camps are given a provision that imports that are intended for food, feed, and processing, and are thought to be genetically modified, must be labelled by the rather moderate warning, "may contain."

On the other hand, the Miami Group received a preamble that could be construed to mean that the CPB is not to circumvent other international agreements, including the WTO's SPS guidelines. Thus, the precautionary principle can be sterilized. Also, it must be noted that the labelling requirements of "may contain," are relatively moderate compared to some of the possible alternatives. In addition, the extent to which labelling and the precautionary principle are to be applied is extremely limited. Exceptions include many agricultural commodities, processed foods, and pharmaceuticals.

Upon initial assessment it is apparent that the CPB will be unable to regulate the GMO issue adequately and, if anything, that the scales have been tilted in favour of the Miami Group. However, anti-GMO camps can celebrate the fact that the CPB was the first time international law officially recognized that GMOs were different than other products. Also, for the first time the EU concept of a precautionary principle has been recognized as being the best way to approach the GMO issue.

F. How Will the CPB Be Interpreted Within the WTO?

The CPB, and consequently the countries that will sign the protocol, are in a very precarious situation. On the one hand, the CPB is set up to be mutually supportive with other international trade agreements

(including WTO agreements). Also, while the CPB is not expressly subordinate to other agreements, it is not to be used to circumvent alternative settlements either. Interestingly, this element has been interpreted by many as suggesting that the CPB is to be subordinate to other agreements.

Realistically, this detail may render the CPB sterile. The CPB's precautionary principle (that the importing country may ban the import based on a belief and without scientific proof) directly counters the WTO's SPS regulations (that imports must be allowed unless the safety is questionable – based on accepted scientific principles). Therefore, the interpretation of the precautionary principle in relation to the conflicting SPS regulations is of critical importance to the regulation of GMOs. The WTO's effectiveness as a trade referee may yet receive its most challenging test to date.

As mentioned above, the WTO has demonstrated a "lack of teeth" in following through on some dispute rulings, most notably the Beef Hormone Dispute. That dispute is an elementary problem compared to the potential conflict that may arise when the precautionary principle and the SPS regulations clash.

Compared to hormonally injected beef, GMOs involve more controversial science and more complex technology. Also, the potential financial gains and losses are more significant. The GMO industry is in its infancy and there seems to be no limit as to how far the technology can progress. GMO science will undoubtedly progress to include the ability to genetically modify more complex organisms. Pro-GMO camps fancy the riches associated with this great potential. Obviously, a ruling against GMOs at this stage in their development would be quite a significant setback for the GMO industry.

If the WTO disregards the precautionary principle when faced with a conflict against SPS regulations there is a very negative message sent regarding the validity of the CPB, the UN, or any other subsequent attempt to place effective and binding regulatory controls on the GMO industry.[100] If the WTO were to uphold the precautionary principle it would be a huge victory for protectionists that could lead to further conquests and could also upset the political balance over this sensitive issue.[101]

Because applying regulations to GMOs is a novel activity, the WTO is not bound by existing case law. Apart from political pressures, the WTO has virtually free reign. As an alternative to siding with one of the

---

[100] "Biotechnology and You – The Farmer," online: Biocritics <http://www.biocritics.org.new/.mon2000!//>.

[101] McCarthy, *supra* note 27.

opposing camps, the WTO may take a middle-of-the-road provisional approach. The WTO may agree to loosen its demand and stop requiring scientific proof of danger by the importer until more information on GMOs is gained. While this decision would be a short-term victory for anti-GMO factions, it could promote a more prudent approach to the regulation of GMOs, especially if a provision to force independent long-term testing was enacted. Ultimately, once they go to greater lengths to prove the safety of their products, the pro-GMO camp could be the victor.

Possibly the largest wildcard in this complicated equation is the fact that the US did not sign the CPB. Strangely enough, this non-occurrence was not an example of current political posturing. The US could only observe the 2000 UN Biodiversity Conference because it did not agree to the 1992 Convention on Biological Diversity. In other words, the CPB is a part of a larger treaty the US has not agreed to.[102] The US could not sign or ratify the agreement even if it was in favour of it but could only observe the proceedings.

Although the US was relegated to observer status during the creation of the CPB, it was still able to have input through allies in the Miami Group. The US is expected to comply with the CPB when exporting to nations that have ratified the agreement and have pledged this intention publicly. However, the US, as the world's largest exporter of agricultural grains and the country with the most financial investment in GMO heavyweight corporations such as Monsanto, has always steadfastly maintained that no labelling should be required if the genetic modification does not alter the chemical composition.[103]

Because the CPB situation is novel, the US may be able to establish a valid claim that it is not bound to accept any rulings on the CPB. At this point one can only speculate whether the WTO's dispute mechanism can shackle the powerful US to an agreement that it never signed. Legal precedent indicates that the US cannot be bound. Another scenario that could arise concerns the possibility of the Americans following the CPB agreement for a period of time, then unilaterally deciding they are not bound by it – a protocol they never signed.[104]

---

[102] Personal electronic correspondence from C. Kinzel to authors (11 March 2000) B. Lambrecht "In a Hearing, Ashcroft Assails New Accord on Gene-Altered Food; He Says Biosafety Protocol Gives Europe Too Much Clout on Trade Restrictions" *Genetic ID* (9 February 2000) A1.

[103] "Food Safety: Protection or Protectionism?" *OECD Observer* (1 March 1999), online: OECD Observer <http://www.oecdobserver.org/news/fullstory.php3?aid=3>.

[104] McCarthy, *supra* note 27.

If the US has an export rejected based on the precautionary principle, it may well seek recourse at the WTO. Consequently, the WTO could ignore the SPS Agreement and decide to uphold the rejection of the export based on the precautionary principle.[105] If the US decides not to comply based on the fact that it was not a party to the CPB, it may retaliate by placing onerous tariffs on the rejecting country's exports.

It can be argued that failing to comply with the Protocol may not be the best route for the US to take. If the US were to fight a WTO ruling against its GMO exports aggressively, it would risk a hurricane of negative publicity. This negative publicity would not only attack the specific GMO product in dispute, but would also attack the entire GMO industry. The GMO industry's reputation, from the consumer's point of view, is precarious at the best of times. Conceivably, the US could have an export rejected based on the precautionary principle, but could then win the dispute at the WTO by relying on SPS criteria. Undoubtedly, winning the dispute through legal means rather than winning through the scientific justification of safety would not be portrayed in a positive light by the media. This scenario may be devastating to the GMO industry's already suspect reputation.[106]

While the US might have gotten away with bullying tactics a few years ago, due to increased public awareness on the topic, it would not today. For instance, it is estimated that during the conference in Montreal there were four times as many non-governmental observers and ten times as many members of the press as there were the previous year during the Cartagena Conference.[107] Ultimately, for the US to win a short-term battle at the expense of losing the ultimate propaganda war, will not be a long-term benefit.[108]

An even worse scenario arises from the possible negative backlash on the GMO industry's biggest customers – North American consumers. North American consumers may yet take a more European-like precautionary stance against the normalization of GMOs. This could occur if US trade representatives do not approach the problem in a thoughtful way that will diffuse the negative publicity of safety and health concerns. If increased media exposure on the subject is any indication, North American attitudes toward GMOs are becoming progressively similar to that of the EU.

---

105 "Trade – GMO Deal Struck" *Business Europe* (9 February 2000) (pagination unavailable).

106 *Ibid.*

107 F. Lyman, "Pact Shows There's Biosafety in Numbers" MSNBC Contributor; *Supra* note 106.

108 *Supra* note 109.

In a GMO trade dispute, even if the WTO sides with a GMO exporting country (based on the SPS regulations surmounting the precautionary principle of the CPB), the GMO exporter is not assured success. For example, if Canada were to pursue WTO legal means to strike down an EU ban against GMO importation, there would be enormous negative publicity in an already hostile GMO environment. GMO retailers in the EU could never override consumer concerns. Thus, the victory is only notional.

Again, consider the Beef Hormone Dispute that has yet to be resolved. Canada and the US technically won the dispute but were ultimately defeated. Hormonally injected beef has gained a negative reputation, consumers in the EU as well as consumers in other markets (including domestic Canadian and US consumers) are more skeptical of North American produced beef, and the WTO decision continues to be ignored by the EU. The strategy of relying on the WTO's dispute mechanism to ensure exportation rights is a costly, risky position. Bottom line, the consumer is king. It is extremely difficult to override consumer concerns, especially when a "red flag" is waving in the media.[109] Once consumers reject a product based on health or safety concerns, there is little value in pursuing the WTO dispute mechanism as a recourse.

If the WTO sides with the CPB, the protectionists win and the GMO industry is sent scurrying for relief. If the WTO sides with the SPS Agreement, the GMO industry must still deal with negative consumer reactions.[110] While on the surface the CPB can be considered a victory for the pro-GMO camp, it is really a mere compromise. The CPB has served to bring the issue of the advancement of the GMO industry into a greater media spotlight. Because of exposure to the issue, the CPB is effective for anti-GMO factions regardless of its ultimate potency in WTO disputes.

Realistically, the CPB is not a final resolution of the underlying issue. The main problem remains unsolved: how to reconcile differing government attitudes toward the risks of technological change in agriculture while refraining from disrupting trade.[111] Once ratified, the CPB will probably stir up many initial trade disputes. Considering that the nature of the technology changes so rapidly, the environment of the dispute will change materially long before the CPB is slated to come into effect (in 2-3 years).[112] The last word is yet to be heard.

---

[109] McCarthy, *supra* note 27.

[110] *Ibid.*

[111] *Ibid.*

[112] "Global Treaty Adopted" *Agence France Press* (8 February 2000) (pagination unavailable).

IV. A FARMER'S PERSPECTIVE

THE UNCERTAIN FUTURE OF GMOS is enough to create concern in any businessperson. Farmers are on the front lines of the GMO battlefield. Already weary from battling foreign subsidies and low commodity prices, not to mention day-to-day battles with mother nature, farmers are now faced with large and unfamiliar questions regarding GMOs. Yet, in general, Canadian farmers have already accepted the GMO technology. As previously mentioned, 70% of canola grown in Canada's western provinces is genetically modified.

A. The Origin of Canadian GMO Production

GMOs entered Canadian supermarkets quietly in the early 1990s in an environment of deregulation. Current industries demand speed to market and the GMO industry accepted this challenge, developed, and sold its products very quickly. In just a few years, genetically modified food changed from a novelty to a regular product.

For the most part, farmers did not foresee consumer objections to genetically modified products. For centuries farmers have been modifying nature to create enhanced products. The current media exposure has only recently suggested that consumers need to be concerned about GMO consumption. The propaganda war currently being waged against GMO production was largely unexpected.

B. Unfulfilled Promises & Public Relations Blunders

Large multinational GMO corporations, such as Monsanto, have promised to bring farmers to the "promised land." GMO's have been marketed to farmers as a magnificent benefit because they allow for easier pesticide controls, more consistent harvests, and lower costs of production. For the most part, however, these promises were not delivered. Prices have remained low and costs of production have not been reduced.[113] Canadian farmers who expected genetically modified crops to make their work easier are now suddenly starting to feel the squeeze.[114]

In addition to the unfulfilled promises regarding the capabilities of genetically modified seeds, the public relations war in favour of genetically modified products is continuously being lost. Early on,

---

[113] Cranfield, *supra* note 16.

[114] C. Reynolds, "Frankenstein's Harvest" *Canadian Business* (8 October 1999) 64.

companies like Monsanto failed to market GMOs effectively to consumers. Instead of educating and assuring customers of safety, the GMO industry gave consumers in the EU the impression that they were capable of forcing genetically modified products "down their throats." Consequently, there was an immediate propaganda backlash in the EU,[115] which has now started to spread to other markets. This flawed marketing strategy has proven to be just the beginning of a progression of public relations blunders.

In addition to trying to bully GMO products down consumer's throats, the GMO industry also made mistakes in packaging its product. The potential benefits of genetically modified products were never communicated to consumers in an effective way. For example, the term of choice was "genetically modified." Why not genetically enhanced?

Of course the GMO industry can attempt to correct these marketing mistakes by focusing on potential nutritional boosts and more tangible benefits like the promise of a reduction in food costs. There is the risk that a new marketing campaign may be received as "lip service." It may be too little, too late.

C. Farmers Need a More Reliable Strategy

Now that the GMO industry has had such a poor start, farmers must cut through the "flowery speech" and focus on what the market really wants. As mentioned, the customer is "king."[116] Customers want a cheap supply of quality food.[117] If farmers consider market acceptance levels of GMOs, they will realize that consumer fear regarding GMOs is real and is growing continuously.[118] Once the issues of health and safety risks have been raised, customers will demand more assurances and more information. Short-term testing of health will probably not be enough to satisfy consumers.

The international marketplace is changing. The EU was the first to oppose genetically modified products and the rest of the world's consumers are starting to take notice. Monsanto's error-filled marketing campaign has made it very easy for anti-GMO camps to communicate their message simply by playing on Monsanto's stupidity.[119] Anti-GMO

---

115 *Ibid.*

116 S. Laidlaw, "Segregate Altered Crops, Farmers Urge — Consumers Will Demand Natural Foods" *The Toronto Star* (16 Feburary 2000) BU03.

117 *Ibid.*

118 S*upra* note 104.

119 Laidlaw, *supra* note 120.

camps are taking advantage of these mistakes and are growing in numbers and power.

The president of the Canola Council of Canada took a very nearsighted view when he recently advised producers to forget about the EU and to focus instead on the Japanese, Chinese, and North American markets. These markets have bought 99% of Canadian canola over the last few years.[120] He also pointed out that these markets have not given specific signals that they will want Canada to change.

This view is dangerous. One does not have to listen very closely to hear murmurs of change. The EU was previously a big buyer of Canadian canola; they no longer are because they have domestic, non-GMO production.[121] Also, Japan has stated that it will start to get serious about labelling in 2001.[122] Food producers in other major markets including Australia, New Zealand, Japan, Brazil, and South Korea have also begun to focus on non-GMO production of canola.[123] Contrary to what the president of the Canola Council of Canada has said, it is clear that most international markets want less and less GMOs.

We are entering a new era. Ignoring anti-GMO markets such as the EU may seem like an acceptable short-term strategy, but nobody really knows what the future holds. It seems a much more prudent strategy to set up a non-GMO, labelled industry. A non-GMO industry may grow to be a significant market force.

As far as the North American market is concerned there are currently no organized mainstream protests against GMOs. Significant protests may, however, surface soon. Anti-GMO movement may just be slower to develop due to differing attitudes toward food safety and a greater trust in the food safety systems. North American attitudes are changing.

Media exposure regarding the anti-GMO sentiment in Europe is transforming many of the North American "fringe" anti-GMO groups into the mainstream groups. North American anti-GMO propaganda is gaining momentum. These protest groups are getting serious, as there have been threats of a barrage of anti-GMO advertising.[124] If more

---

120 A. Ewins, "GM Canola Situation Unpredictable" *Western Producer* (20 January 2000), online: Western Producer <http://www.producer.com/articles/20000120/market_quotas/20000120mkt01.html>.

121 *Ibid.*

122 *Ibid.*

123 Reynolds, *supra* note 118.

124 Reynolds, *supra* note 118.

negative propaganda against GMOs is released, GMO producers will have little ammunition to fight back with.

The segregation of crops has been suggested as a feasible way of establishing a middle ground and allowing the consumer to decide. Some large food producers have reportedly been ready to pay a premium for segregated products under contract. More and more markets may be lost to farmers who don't segregate. In Indiana there is a group that is getting together to begin to label independently.[125] However, segregation is expensive and Monsanto has indicated that they will not be willing to contribute financially, unless of course the market forces them to. Thus, farmers and consumers will have to bear the cost.

As previously mentioned, segregation on a large scale is probably unrealistic. First, it will be a logistical nightmare to determine how to combat the drifting of GMOs into "neighbour" non-GMO fields.[126] Also, no segregation infrastructure exists. Creating two separate transportation and storage systems would be extremely cost prohibitive.

D. Think Market, Market, Market

Taking all of the anti-GMO market forces into consideration there are few positives left for GMO farmers. In fact, farmers cannot even turn to Monsanto for relief. Monsanto has treated farmers as poorly as it has marketed GMOs. For example, in order to use Monsanto's pesticide resistant seeds, a farmer must pay an acreage fee over seed cost, must agree to use only Monsanto herbicide, will lose the right to save seeds for subsequent years (which is a common strategy), and must give Monsanto the right to perform surprise inspections (to ensure that the farmers are complying with these restrictions) for three years even if the farmer stops using Monsanto seeds after one year.[127] The conditions of these contracts seem onerous.

The realities of the globalization of agriculture have put Canadian farmers in a disadvantaged position. Without proper marketing studies predicting a shift in consumers' tastes, a significant number of Canadian farmers started to produce genetically modified products. Due diligence was not adhered to; not enough foresight was utilized.

Realistically, looking at the current and probable future market conditions, it would be best to reduce the Canadian farmer's exposure to

---

[125] S*upra* note 120.

[126] S. Pratt, "Companies Should Share GMO Costs" *Western Producer* (20 January 2000) (pagination unavailable), online: Western Producer <http://www.producer.com/articles/20000120/news/20000120crop01.html>.

[127] Reynolds, *supra* note 118.

GMO production. Even if the science is sound and GMOs are healthy and safe, what really counts is the consumer's reactions. Until consumers are comfortable there will not be reliable, consistent markets for GMOs. In all likelihood, consumers' outright acceptance of GMOs will not occur anytime soon. Farmers may be wondering what they got themselves into and it is possible that Monsanto is wondering the same thing.[128] It seems that customers will evaluate new technology when it comes to one of life's staples.[129]

The establishment of globalization has made the world smaller. A whisper in one corner of the world transmits quickly and rapidly to all corners. The recent protests at the 1999 WTO meetings are a prime example. These intensive protests were organized cheaply through internet communication. Anti-GMO protests are getting louder and are reaching more markets. If anti-GMO sentiment becomes a significant force in the North American market, Canadian agriculture could be devastated.

Western Canadian provinces' canola is 70% genetically modified. Canada's largest export grain is wheat. While genetically modified wheat has not yet been developed, it is expected to be developed for consumer consumption within two to four years.

The Canadian Wheat Board (CWB) markets wheat, Canada's largest grain export. Because the CWB does not market canola, its official position regarding GMOs has yet to be developed.[130] The CWB is currently monitoring the international market's approval of genetically modified canola to be used as a guide for how genetically modified wheat may be received by consumers.[131] The uncertainty over the legal resolution of GMO disputes, namely how the CPB will be interpreted inside the WTO, and the growing consumer protest movement against GMOs should make farmers and the CWB uncomfortable. Marketing boards, such as the CWB, should implement a strategy and educate farmers as to the realities of the GMO market so that more educated decisions can be made.

In terms of GMO production, the strategy "build it and they will come" may be a recipe for disaster. It does not matter whether GMO products are truly safe or not. The consumer's choice need not be based on logic. Many products have come to market before their time and have failed for no reason other than the consumer's irrational rejection. GMOs may be this type of product.

---

128 *Ibid.*

129 S*upra* note 120.

130 Telephone interview with A. Lamont, Legal Council, The Canadian Wheat Board (17 March 2000).

131 *Ibid.*

If consumers are wary about GMO products then producers of GMO products should take notice. Canadian farmers should seriously consider creating a distinct advantage by producing non-GMO crops. Consumers may perceive non-GMO products as superior and may even be willing to pay a premium. The Canadian farmer may yet have the opportunity to profit from the whole GMO mess. The logistics of implementing this plan may be extreme (and left for a discussion in another report), but the potential returns may be fantastic.

V. CONCLUSION

THE TRADE OF GMOS has created quite a controversy among governments, food producers, and consumers alike. One half of the world's economic force is pushing for the normalization of GMOs; the other half is pushing for GMO bans. The existing international regulatory bodies must adjust quickly to meet the new demands created by globalization and technology. The recent CPB created at the Montreal conference will attempt to address these needs. The question that remains to be answered is whether the international community, through the use of the CPB, will be able to resolve the GMO issue.

On the frontlines of the battle is the Canadian farmer who was sold GMO technology in the early 1990s, but by the end of the decade is starting to lose faith in it. As the anti-GMO faction continues to gain momentum markets may turn against GMOs. If anti-GMO sentiment develops in North American consumers, the Canadian agricultural industry will be devastated. To say the least, Canadian farmers have important decisions to make. However, every challenge creates opportunity. Canadian farmers may be able to take advantage of the market's negative reaction to GMOs and develop an enhanced GMO-free product. For the troubled farmer, hope springs eternal.