

China's Biotechnology and Trade – Does it Conform to the WTO?

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2004

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Abstract:

The People's Republic of China has been working for over two decades to develop a domestic biotechnology industry. Even though China is a developing country, it is set to become a significant international player in the field of biotechnology. China's accession to the World Trade Organization in December of 2001 means that China's trade and regulatory regime should now reflect WTO norms. This paper outlines the development of the Chinese biotechnology industry and how it may evolve in the future. China's regulation of their biotechnology industry and imports will also be examined as their effect on the industry could be very significant. The conclusion is that China must tread carefully in regards to regulations if they are to avoid stifling their carefully constructed biotechnology industry.

Keywords: biotechnology, China, WTO

China's Regulation of Biotechnology – Does it Conform to the WTO?

Introduction

The People's Republic of China represents an important and growing market for the use and import of biotechnology products. Further, considerable investment has been made to develop an indigenous biotechnology industry. China, however, has not been immune to the general international debates surrounding trade in the products of biotechnology (Gaisford et al., 2001). In addition, China has only recently joined the World Trade Organization (WTO) and is currently attempting to manage the extensive trade liberalization that was a pre-condition for its accession. According to China's trading partners, progress in conforming to WTO norms has been slow and a number of impediments remain before China can be considered fully integrated into the international trade regime. Both China and its trading partners stand to reap large economic benefits if foreign biotechnology industries are allowed access to the Chinese market. To fully reap the benefits associated with the Chinese market, a liberal trade regime is required. As a result, the regulatory framework that is evolving in China and, particularly, the enforcement of its rules, will require considerable additional effort if international norms are to be achieved (USTR, 2003a).

In addition to the extensive changes involved in moving China's economic system from central planning and command to *market socialism*, its international trading and domestic regulatory regimes have had to undergo fundamental changes in recent years as a result of its WTO accession commitments. Not only did China have to reduce or eliminate a wide range of trade barriers and open its domestic industries to increased

competition, it also had to modify and add to domestic legislation in order to be in compliance with WTO protocols (USTR, 2003a).

This paper will examine the potential and potential obstacles in regards to the development of a biotechnology industry in China and trade in biotechnology products. Important factors considered will be China's trade history, trade policies and practices, market significance, biotechnology industry and domestic regulation. Issues surrounding government and private sector compliance with international obligations and domestic law must be also be considered. The international obligations that will have the most profound effect on trade in the products of biotechnology will be China's WTO accession agreement, general WTO norms regarding market access and the WTO's agreement on Sanitary and Phytosanitary measures (SPS).

The Chinese Economy

Within the next 20 years, China has the potential to become the second-largest economy of the world, second only to the U.S. (The Economist 2001a). The Chinese economy has shown consistent growth over the last few decades. Between 1997 and 2001, the economy grew by 24.7 percent. In 2001, China was the world's fastest growing large economy with their GDP growing at over 7 percent a year. (The Economist, 2002). Given China's large population and rapidly rising incomes, it is not surprising that firms in modern market economies, including biotechnology companies, are interested in being able to take advantage of opportunities that they perceive are available in the Chinese market. In addition, Chinese consumers had the highest acceptance of biotechnology products out of 10 countries studied including the US, Canada, Japan, Russia, India and four European countries (Gale et al., 2002). This

acceptance will increase biotechnology firms' desire to enter the Chinese markets as they find their products increasingly restricted or rejected from other markets such as the European Union.

The Chinese Biotechnology Industry

China's massive population has begun to create problems and challenges for the Chinese government. Although almost one quarter of the world's total population lives in China, they live on only 7 percent of the world's arable land (Canadian Trade Commissioner Service, 2002). In addition, there has been a steady loss of arable land due to erosion, salinisation, desertification and urbanization. This loss has been at an alarming rate, estimated at 300,000 hectares per year (Kowalski, 2003). This creates the potential for serious social problems such as localized famines and food shortages, pollution and land degradation. The Chinese government views agricultural biotechnology as a tool to:

help improve the nation's food source, raise agricultural productivity, increase farmer's incomes, foster sustainable development, and improve its competitive position in international markets (Huang et al., 2001 p.1).

Advanced agricultural technology, such as biotechnology, will become critical for China's food security (Kowalski, 2003). In response, the government has made considerable resources available to the sector and actively promoted its development since the mid 1980s (Huang et al., 2001).

The biotechnology sector in China has enjoyed considerable scientific success and has grown to a considerable size but remains funded almost entirely by the government. Success has led to a rapid increase in support in recent years. In the second half of the 1990s, biotechnology spending more than doubled from the equivalent of US \$40 million

to US \$112 million per year. The Chinese government has also promised to increase research budgets by 400 percent over the five-year period between 2002 and 2007. Even though China is a developing country, its total expenditures on agricultural research and development comprises an estimated 10 percent of global public expenditure (Gale et al, 2002).

There are currently nearly 400 major biotechnology laboratories aided by the government and more than 20,000 research and technical personnel working in the industry (Wang, 2002). This research effort has yielded a wide array of genetically modified (GM) varieties that have gone through field trials, been cleared for environmental release and have been put into commercial production. Genetic modification has had a number of objectives (or combinations of objectives): insect resistance, bacterial-fungus resistance, virus resistance, salt tolerance, drought resistance, nutrition enrichment, quality improvement or yield increase (Chen and Qu, 2002).

China has the fourth highest commercial acreage of transgenic crops, behind the U.S., Canada and Argentina (Pray, 1999). Six crops have been issued licences that permit commercial production. Two licences were granted for different varieties of insect resistant cotton. In 2000, GM cotton was planted on 700,000 hectares in China (Huang et al., 2001). Two licences were also granted to tomato varieties, one that is modified to delay ripening and one that is virus resistant. Colour-altered petunias and virus resistant sweet peppers have also been licensed. Monsanto, which is based in the US, holds the only license that has been issued to a foreign company for their variety of GM cotton (Chen and Qu, 2002).

There are still a large number of modified plants that have not yet been commercialized but are in field trials or have been cleared for environmental release. As of 1999, these included: two new varieties of insect resistant cotton; three varieties of disease resistant cotton; insect, disease and herbicide resistant rice; salt tolerant rice; improved quality and virus resistant wheat; improved quality and insect resistant maize; herbicide resistant soybeans; disease resistant potatoes; disease resistant rapeseed; virus resistant tobacco; virus resistant peanuts; virus resistant cabbage; cold tolerant and multi-virus resistant tomatoes; virus resistant melons; virus resistant papayas; insect resistant poplar trees; and bacterial resistant pogostemun¹ (Huang et al., 2001).

Trade in the products of biotechnology is increasing in importance. From January to April of 2003, biological technology imports equalled US \$36 million. During that same period, there were US \$60 million of biological technology exports. During the four month period beginning in January of 2003 and ending in April of 2003, there was a 6.9 percent increase in imports over the pervious four month period. Exports showed even stronger growth. January to April showed a 28 percent increase over the previous four months (Ministry of Commerce of the People's Republic of China, 2003). Soybean imports from the US alone, 70 percent of which are genetically modified, are over US \$1 billion per year. This is the single largest market for US soybean exports (Ohio Integrated Pest Management, 2002). China's most important GM export is cotton – 51 percent is genetically modified (Kyne, 2002).

China's Biotechnology Policy

The Chinese government's biotechnology policy will be an important factor in encouraging both private domestic production and international investment but, as yet, it

is full of contradictions, ambiguities and lacks transparency, particularly for international firms. Professor H.G. Wang (2002) of the China National Center for Biotechnology

Development claims that:

[the] basic policy is to strongly support the Research and Development; prudently promote the application of biotechnology; ensure the bio-safety and promote sustainability of the bioindustry (p.2).

While the government of China provides considerable financial support for the biotechnology industry and makes extensive claims about the benefits biotechnology will bring to their society, when it comes to regulations, the commitment is less firm and increasingly opaque. The President of Monsanto in China, John L. Killmer states that, “[China has] one foot on the accelerator, which is funding biotech research and development, and they have one foot on the regulatory brake” (as cited in Dosh, 2003, p. 2). The lack of clear and consistent direction from the government creates an extremely risky business environment for those wishing to export GM products to China or to invest in biotechnology related activities, including research. In January 2002, China published import regulations that required labelling and safety certification for all GM animals and plants entering China for sale, production, processing or research. Obtaining a certificate to import GM products is an complex process that may take up to 270 days and whose requirements can act as a significant trade barrier (Gale et al., 2002). Trade issues are dealt with at greater length later in this paper.

While imports have received the most scrutiny, domestic producers are not immune to regulatory hurdles. On May 23, 2001, the Chinese State Council promulgated the “Regulations on the Safety of Agricultural Genetically Modified Organisms”. These regulations provided for:

largely similar, though somewhat less densely regulated, mechanisms and principle as the Swiss Ordinance on Releasing Organisms in the Environment or the European Union's Council Directive on the deliberate release into the environment of genetically modified organisms (Kaiser and Thaler, 2001 p.1).

The general principles underlying these new regulations include that the biosafety of GM crops and other organisms, as well as the risks associated with them, should be assessed on a case-by-case, variety-by-variety, line-by-line basis and in a stepwise manner. Decision making should be based on demonstrated risks, biosafety reviews should focus on the scientific questions and data, an expert panel should play an important role in the decision-making process and regulatory requirements should be consistent, dynamic and transparent. When assessing the safety of a GM crop, regulators now base their decisions on several key parameters such as the characteristics of the organism, introduced trait and intended use, the interaction the organism will have with other environmental factors and the combination of all these factors (Cheng and Peng, 2002). Once these GM crops are approved and enter the Chinese market, they may also be subject to strict labelling requirements. State authorities are still working to establish and clarify the requirements that will apply to different classes of products (Kaiser and Thaler, 2001). The Chinese government hopes that these regulations will ensure the biotechnology products grown in China for both domestic consumption and for international trade will not pose risks to human health or the environment. These regulations have already been responsible for delaying several attempts to commercialize new varieties of crops such as rice and corn (Cheng and Peng, 2002).

In general, it appears that China is beginning to put in place increasingly stringent regulations on GM foods in particular. While widespread support and favourable policies

have been granted for non-food GM products (such as cotton), both domestic and international food safety concerns have begun to influence the government's regulations and policies regarding GM foods (Gale et al., 2002). Some Chinese scientists argue that this more cautious approach is justified given that the next generation of GM crops includes staple foods such as rice which could be consumed by billions of people around the world and whose safety now rests in China's hands (The Economist, 2002).

Looming Problems for China's Biotechnology Industry

While the domestic industry, through generous support from the Chinese government, is becoming one of the major international biotechnology players, they face significant challenges and have some fundamental problems that must be remedied if it is to be successful in the long run. As mentioned above, almost all of the biotechnology programs have been fostered by the Chinese government. Subsidies, however, do not come without strings, particularly in a society where command from the centre has been the norm. As a result, there are many conditions attached to receiving subsidies and, in particular, deciding which crops and traits research will focus upon². While most biotechnology entrepreneurs would rather have private funds, private sector investors are reluctant to commit their resources until they know that the regulatory regime will give them a reasonable chance to be able to recoup their investment (The Economist, 2002).

Another significant challenge is managing the large and extremely complex agricultural biotechnology effort in China. Lack of coordination between the numerous divisions administering the program and between individual researchers has contributed to unnecessary and inefficient duplication of efforts, particularly at the local level. This results fewer, more expensive technology advances (Huang et al., 2001).

The Chinese government's failure to provide clarity regarding the future direction of regulatory policy has made foreign governments, particularly those in the European Union, extremely nervous that insufficient care will be taken in the design and enforcement of regulations to assure the food safety and environmental concerns of consumers and others in the European Union. As a result, they have been pressuring the Chinese government for stricter safety protocols. The government has not yet been able to find a good balance between ensuring their products are safe, satisfying international concerns and encouraging the industry to grow. If the balance cannot be found, not only will the public firms suffer considerably, meaning ongoing subsidies, the lack of certainty will discourage private domestic and foreign investment (Gale et al., 2002).

While the apparent acceptance of biotechnology products in China is a significant advantage at present, there is uncertainty over its long-term continuance. Although the limited information available suggests that Chinese consumers have a high level of awareness, they also have little accurate knowledge of GM foods. As Chinese consumers have not been exposed to the debates regarding the safety of biotechnology, their views could easily be shifted if there were to be negative media coverage in the future (Gale et al., 2002).

The Chinese government has put regulations in place that restrict foreign investment in an attempt to ensure that what they perceive as a vital future industry remains under domestic control. The cost may be loss of opportunity for technology transfers (Kerr et al., 1997). On April 1, 2002, China enacted the "Catalogue for the Guidance of Industries for Foreign Investment". This new regulatory regime prohibits foreign investment in the production and development of trans-gene plants seeds

(Loppacher and Kerr, 2004). These regulations are the most restrictive regulations on the production, research and importation of genetically modified organisms (GMOs) in the world. While this will provide a short run benefit for the Chinese biotechnology industry because it will face no foreign competition in the lucrative seed-development business, they risk going it alone and failing. If China lags behind foreign seed providers, farmers may turn to illegally imported seed (Dow Jones Newswire, 2002).

Intellectual Property Rights (IPRs) will play an important role in the survival of the biotechnology industry and in ensuring that new innovations are made. In order to protect this knowledge-based industry, China must deal with serious deficiencies in domestic IPR laws. Some foreign companies have already begun to show their reluctance to enter the Chinese market for fear of widespread piracy. This, like the restriction on seed imports, could result in the Chinese market lagging behind their foreign counterparts in regards to the technology employed in agriculture. For more detail on this issue see Loppacher and Kerr, 2004.

Future Prospects for the Chinese Biotechnology Industry

Despite the fact that the Chinese biotechnology industry is facing some significant challenges, it appears that its intermediate term prospects are relatively good. China is still going through a period where deep and widespread changes in the way that its markets and international trade regimes operate, particularly regarding how the government can intervene in the economy (Kerr and MacKay, 1997). While in the long run, this change will almost certainly prove to be beneficial for both China and its trading partners, in the short run, the degree of uncertainty will limit enthusiasm for the Chinese market. One of the most critical factors for the biotechnology industry's long term

success will be that motivation for success must come not only from the existence of profitable opportunities, as is the case in most developed nations, but also the realization that biotechnology could help solve some of China's most pressing social problems. As the Chinese population continues to grow and tax available food and land resources, even more attention will be placed upon finding alternative means to deal with these problems. Faced with these pressures, China is likely to give more weight to the extensive potential benefits of biotechnology (Gaisford et al., 2001) than developed countries while at the same time giving less weight to the risks.

As the government liberalises the economy, China seems ripe for increased private investment. The changes required to meet WTO obligations and Chinese firms having an increased ability to form joint ventures with other international firms will be the main inducements for foreign investors (Pray, 1999). The Law of the People Republic of China on Chinese-Foreign Contractual Joint Ventures, adopted on October 21, 2000 was designed to reduce the risk associated with forming joint ventures including protecting the lawful rights and interests of the international partner. There remains however, certain industries in which foreign investment is severely restricted or even prohibited, such as the production and development of trans-gene plants seeds (Loppacher and Kerr, 2004). The Chinese government must carefully consider policies that restrict foreign investment in the industry as it will: (a) irritate other governments, possibly to the point of filing an official complaint with the WTO and; (b) segregate their industry from advances made in other (most likely developed) nations that could cause the Chinese industry to fall behind its competitors (Dow Jones Newswire, 2002). In relation to the direction safety regulations will take, some optimism exists that the government will

want to ensure that its enormous investment in biotechnology will pay off and will realize the danger they are putting their biotechnology industry in by instituting extremely restrictive policies and move to alter their regulations accordingly (The Economist, 2002).

Trade Issues Surrounding Biotechnology

China has had to dramatically alter its trading practices, regulations, tariff system, non-tariff trade barriers, market structure and domestic legislation in order to be in compliance with their WTO accession agreement. While China has made considerable progress in moving toward compliance with the WTO's trade regime, the process has been difficult and may result in a considerable number of trade disputes. The Chinese government still frequently changes major policies affecting trade with little to no notice given to other members of the WTO. Even after these policies are made public, they are often vague and full of ambiguities. Rapid and unilateral shifts in trade policy and domestic policies that affect international commerce runs contrary to the WTO and will lead to complaints from China's trading partners.

Many of the most restrictive policies faced by firms wishing to export to China are a direct result of the pressure the government faces to provide strong domestic protection (Canadian Trade Commissioner Service, 2002). While Chinese economic reforms have reduced the role of government, there is still a widespread expectation that the government should intervene when firms face financial difficulties. When China joined the WTO, they had to agree to reduce or eliminate a wide range of trade barriers. This has led many analysts to believe that the motivation for some of these new and confusing regulations is a way to circumvent China's WTO commitments and provide protection

for their local industries. These technical and “scientific” barriers to trade have already been used to deny exporters of biotechnology access to the European Union market and many believe it is reasonable to assume that China sees it as a way to skirt around their obligations to open their markets to foreign competition (*Inside US Trade*, February 7, 2003). China has also been accused of making less stringent trade regulations for domestically manufactured products than regulations for their foreign counterparts, a particularly contentious issue in biotechnology trade (Canadian Trade Commissioner Service, 2002) and which runs counter to China’s “National Treatment” commitments under the WTO.

China’s Approach to International Trade

The Chinese government’s philosophy on international trade has been continuously evolving over the last two decades, ever since Deng Xiaoping’s “opening to the world” in late 1978. A regime of tight government control in a closed economy has developed into a regime that is allowing more and more price setting through markets and an economy that welcomes foreigners, but only within closely prescribed limits. This change has not been brought about by a change in political ideals, but rather, because politicians’ realization that their citizens demanded significant economic growth that would only be possible through increased international integration. The Chinese government, however, does not perceive trade as serving the same role as (most) governments of modern market economies. While a liberal trade regime is accepted in developed economies because it means lower prices and more choice for consumers, China sees trade as a means to achieve its economic development aspirations. China enters into trade to acquire the technology it needs to develop (Kerr and Hobbs, 2001). It

does not want the foreign exchange acquired through the exports frittered away on the importation of consumer goods. Instead, foreign exchange should be used to acquire technology. This difference in philosophy leads China to be more interventionist in their trade regime than those of developed market economies. It also leads to potential disputes at the WTO. Further, China's experience with trade regimes signed with western powers over the last three hundred years has not been particularly positive, starting with "unequal treaties" arising from the Opium Wars of the 19th century. This leads China to view the WTO from a jaded perspective (Hobbs and Kerr, 2000). One cannot expect China to voluntarily play by the rules, but rather to attempt to circumvent them when they do not suit China's interests.

Chinese officials now say that they have run out of easy things to reform in their economic and social system. In order to maintain the dynamic growth that has contented its citizens for the last twenty-five years, the government realizes they must continue to open trade (The Economist, 2000). Beyond the constraints placed on China's willingness to open its economy by its development orientation, the government of China also faces strong, often regional, demands for protectionism. They have attempted a very delicate balancing act between opening trade and reaping the economic benefits and protecting certain local industries. Some of the contradictions in trade policy and regulations are caused by the trade offs between these two priorities (Canadian Trade Commissioner Service, 2002).

The Legal Regime for Imports in China

China has made sweeping changes in its regulations and trade practices in order to open the Chinese market up to more international competition. China has traditionally

used tariff and non-tariff measures to regulate its imports. Tax measures included value added taxes and consumption taxes as well as tariffs. Non-tariff measures include import licenses, import quotas control, restricted import lists, etc. In order to import, specific documentation is needed and the Chinese importers are generally responsible for providing this paper trail. Required documentation includes bills of lading, invoices, shipping lists, sales contracts, an import quota certificate for general commodities (where applicable), import licenses (where applicable), inspection certificates, insurance policies and customs declaration forms (Hong Kong Trade Development Council, 2000).

Recent changes to the regulatory framework regarding biotechnology have become contentious trade issues. These regulations, ostensibly designed to deal with safety issues, were first promulgated in 1993. The State Science and Technology Commission of China, the Ministry of Agriculture, and the Ministry of Health, all issued regulations regarding biosafety matters (Wang, 2002). These regulations were modified, clarified and enhanced in 2002 when the Ministry of Agriculture issued three documents for managing biosafety, the Biosafety Evaluation Regulation for Agricultural GMOs, Import Regulation for Agricultural GMOs, and Labelling Regulation for Agricultural GMOs (Chen and Qu, 2002). The effects of the Biosafety Evaluation Regulation was discussed above and applies to all products that will be produced in China, including imports of intermediate goods containing GM material. If imports that will be used in the production chain are deemed as having a moderately high degree of risk, the restrictions that the product will face will be quite stringent (Cheng and Peng, 2002). These import regulations have had, and will continue to have, the largest effect on the trade of biotechnology products. These new regulations have been met with strong opposition

from China's trading partners, especially the US, who view them as protectionist rather than science-based. In addition to being coupled with the Labelling Regulation, these regulations require companies exporting products to China to apply for safety certificates stating that their products are harmless to humans, animals and the environment. It has been estimated that it will take at least 270 days, in addition to any delays that may be caused by having to wait for the crops to be grown for evaluation purposes (Ohio Integrated Pest Management, 2002).

The final component of the biosafety management regime in China is mandatory labelling at all levels of production and consumption of genetically modified materials. All products containing transgenic material, such as seeds, animal feed and food products, should have been labelled no later than July 2002. Companies that fail to comply with the labelling system risk having their sales revenue from GM products confiscated or face a fine of between 10,000 Yuan (US \$ 1,200) and 50,000 Yuan (US \$6,000) (*GENET News*, August 4, 2003). As almost no countries have an effective and cheap identity preservation system that can ensure that their products have never been in contact with GM material, many firms wishing to export into China could experience problems in certifying GM material for labelling purposes (Hobbs, 2001).

The Reality of the International Trade Environment in China

As in most jurisdictions that have set rules, there is some discrepancy between the formal rules and procedures and the actual application or bending of those rules in China. The most glaring example of this is how China approaches the new safety regulations on GMOs. As mentioned above, China enacted strict regulations on imports of GM products. There was a considerable backlash when the regulations were put in place as

exporters expressed concerns with the amount of time required to obtain a safety certificate and the costs that would be imposed on them due to the uncertainty caused by these regulations (Gale et al., 2002). As a result, China relented and decided to implement an interim system with far less strict rules for products of biotechnology that initially was to end on December 20, 2002. China then extended these conditions to September 20, 2003 as most firms had still not had enough time to comply with the new regulations (*Inside US Trade*, February 21, 2003). This deadline has once again been extended to April 2004 as China is still not ready to issue permanent safety certificates (*Inside US Trade*, July 18, 2003).

There has also been a considerable discrepancy between labelling regulations and actual practices. One year after all products containing GM material were supposed to be labelled, almost none had been and punishment for non-compliance has been almost non-existent (*GENET News*, August 4, 2003).

Formal Complaints Brought Against China

Some of the China's trading practices have developed into formal trade complaints, mostly from the US. The three main areas of disputes relating to biotechnology products and trade have been the protection of intellectual property, GMO import safety regulations and transparency in regulations.

After the June 6, 2001 announcement that China would be imposing new regulations on genetically modified organisms, US producers were perturbed by not only the "harsh news" of the new safety measures but also China's failure to notify producers exactly what those regulations were. U.S. Ambassador to China Clark Randt wrote to Vice-Premier Wen Jiabao stating that "We know from the U.S. industry that sales of U.S.

soybean have already been affected by the uncertainty that the new biotechnology regulation has created.” (*Inside US Trade*, August 24, 2001 p.22). China further infuriated US producers when on September 27, 2001 it announced a stepping up of requirements for documentation, testing and inspection of soybean shipments. This decision tied up shipments for weeks at Chinese ports. When US negotiators tried to raise the issue, Chinese quarantine officials, in essence, denied that they had instituted new measures or that trade was being deterred (*Inside US Trade*, October 19, 2001). While producers are relieved that China did not close its borders to biotechnology products while the safety regulations were being developed, the lack of information and the uncertainty that the “information gap” caused resulted in hundreds of millions of dollars in lost trade (Letter to the President of the United States, 2002).

One of the common characteristics of the trade complaints that are made, whether they relate to intellectual property laws, import safety regulations, tariff rate quotas, or any other issue, is that the Chinese government fails to give proper notice, fails to clarify important specifics or leaves ambiguities in the regulations. For example, the plans for the strict new import regulations on biotechnology trade were announced in June of 2001 but were not published for over six months. Once the regulations were published, important specific regulatory limits and procedures were not clarified (*Inside US Trade*, October 19, 2001). This lack of transparency does not comply with WTO principles and has become a trade irritant.

China’s Compatibility with the WTO

Since China’s accession to the WTO in December, 2001, there has been a period of disequilibrium as countries, including China, adjust to the realities of this large economy

being formally integrated into the international trade economy. Although China's trade has not been free of conflict, the General Council of the WTO in its review of accession states, "[we] are satisfied with the improvements China has made to its trading standards during its first year as a WTO member" (China Central Television, 2003 p.1). Sixteen committees reviewed different aspects of the commitments China made and how they have lived up to those commitments. These committees reported that China has kept their word in reducing barriers for international access to their markets. The high praise has been coupled with "instructive advice" in order to help China continue to reform (China Central Television, 2003).

While the international community is quite happy with China's general progress, it is obvious from the complaints that have been made that there are still problems that need to be addressed. One of the key problems is with transparency of regulations, a key WTO principle. Questions have been raised by foreign producers, industry groups and sympathetic politicians who contend that China's GM import regulations do not comply with the WTO as they are not based on scientific criteria and that they are applying more stringent regulations on importers than on China's domestic producers (*Inside US Trade*, October 19, 2001). As mentioned above, China has also enacted legislation that prevents foreign firms from investing in genetically modified seed-development. This may violate the spirit of WTO commitments to allow foreign investment and market involvement, if not the text of the agreements (Dow Jones Newswire, 2002).

Future Prospects for Chinese Biotechnology Trade

As shown by the evidence above, China will play an important role in international biotechnology trade, but it will not be without controversy or conflict. The Chinese

government continues to invest heavily in biotechnology development and if they are going to be successful, they must secure international markets for their products. One necessary component of successful trade relationships will include allowing biotechnology products, such as GMOs, into the Chinese market as a sign of goodwill. The new safety regulations that China has put in place are clearly a barrier to trade, whether intended or not. The Chinese government has proved, however, that they are willing to compromise to accommodate the needs of foreign producers and to avoid disrupting trade beyond what is absolutely necessary.

Long term acceptance of biotechnology products in China, both domestic and foreign, has still not been determined. No one knows (likely including the government itself) what the next move will be in terms of regulations for products such as GMOs. China's government needs to take a firm stand rather than trying to sit on the fence. If they decide to support it wholeheartedly, biotechnology producers, such as the US, will become strong international allies. If, on the other hand, China decides that the health and environmental risks are too high and put stringent safety regulations in place, not only will it serve as a significant trade barrier, the effect on their domestic industry will likely be detrimental.

If China chooses to embrace biotechnology, their head start in the market will prove to be an important advantage. China is already the fourth (albeit a distant fourth) largest grower of transgenic plants in the world. They certainly have the potential to at least retain their competitive advantage, if not increase it significantly. As mentioned earlier, China has some issues with compliance to the WTO that need to be resolved if they are to reap all the benefits of their commitments.

Conclusions Regarding China's Biotechnology Industry and Trade Issues

This paper has examined China's biotechnology industry, market structure, legislation, international treaties and obligations, trade policies and issues affecting Chinese trade all in an attempt to answer one fundamental question: Will China be integrated in the world biotechnology industry? It is apparent that China has considerable potential to play an important role in the development of this international industry but they must continue to make a conscious effort to avoid pitfalls.

China has gone down an extremely long road taking it from a segregated and poor country to having the potential to be the second largest economy of the world. They have made this journey, for the most part, by making promises about how things will change and then making token changes. China's promises have allowed them accession to the WTO but those promises must now be acted upon. It is apparent that China still has a considerable distance to travel before it is in exact (or even significantly closer) compliance with their WTO accession agreement.

China's future in the biotechnology industry is still a blank page in the history books, waiting to be written. It is certainly in a position to benefit from the opportunities that biotechnology may provide such as increased food security, domestic production and rural incomes, decrease environmental degradation and the economic, social and political benefits that would accompany increased international trade. While China has laid the foundation as an important player in the industry, they have also began to lay the foundation for stifling their carefully constructed industry by imposing drastic safety regulations on GMOs. The government needs to carefully examine what these arguably non-science based rules could do not only to the domestic biotechnology industry but to

the Chinese economy as a whole. China is now in the unique position of being ready to go in whatever direction it chooses, it just must choose what direction that is.

References

- “6-Regulation: On China’s GE Food Labelling Rules”. *GENET News*. August 4, 2003.
- The Canadian Trade Commissioner Service (2002). *Biotechnology: Mainland China*. available online at http://www.infoexport.gc.ca/docs/cn_chhktap02-5b-e.htm.
- Chen, Z.L. and L.J. Qu (2002). *The Status of Agricultural Biotechnology in China*. Speech at the 7th International Symposium on the Biosafety of Genetically Modified Organisms. Beijing, October. available online at <http://www.worldbiosafety.net/paper/01-Zhangliang%20Chen.doc>.
- Cheng, J. and Y. Peng (2002). *Biosafety Regulation in China*. Speech at the 7th International Symposium on the Biosafety of Genetically Modified Organisms. Beijing, October. available online at <http://www.bba.de.gentech/isbgmo.pdf>.
- China Central Television (2003). *WTO General Council ‘Satisfied’ with China’s 1st Year*. available online at <http://www.cctv.com/lm/933/12/72456.html>.
- “China to Announce Formal Extension of Interim GMO System”. *Inside US Trade*. July 18, 2003.
- Dosh, C. (2003). “Planting Seeds of Profit”. *Asia Direct*. available online at http://www.adhitech.com/menu_48/menu_54.
- Dow Jones Newswire (2002). *China’s Ban on Biotech Investors May Violate WTO Obligations*”. May 13. available online at http://www.biotech-info.net/chinas_ban.html.
- Gaisford, J.D., J.E. Hobbs, W.A. Kerr, N. Perdakis and M.D. Plunkett (2001). *The Economics of Biotechnology*, Cheltenham, Edward Elgar Publishing.
- Gale, F., W. Lin, B. Lohmar and F. Tuan (2002). “Is Biotechnology in China’s Future?” in *China’s Food and Agriculture: Issues for the 21st Century*. available online at <http://www.ers.usda.gov/publications/aib775/aib775m.pdf>.
- “Hastert, Key Republicans Call on Bush to Launch EU Biotech Case” *Inside US Trade*. February 7, 2003.
- Hobbs, A.L. and W.A. Kerr (2000). “Is the WTO Ready for China”. *Current Politics and Economies of Asia*, 9(4): 262-278.
- Hobbs, J. (2001). “Labelling and Consumer Issues in International Trade”. In Michelmann, H.J., J. Rude, J. Stabler and G. Storey (eds) *Globalization and Agricultural Trade Policy*. London: Lynne Rienner Publishers, 269-285.

- Hong Kong Trade Development Council (2000). *Import Regulations in China*. available online at <http://www.tdctrade.com/importreg/chinair.htm>.
- Huang, J., Q. Wong, Y. Zhang and J.F. Zepeda (2001). *Agricultural Biotechnology Research Indicators: China*. Center for Chinese Agricultural Policy, Chinese Academy of Sciences, available online at <http://www.ccap/org.cn/englishtalk/WP-01-E3.pdf>.
- Kaiser, N and P. Thaler, 2001. *China Newsletter*, Wenger Vieli Belser. available online at http://www.wengerlaw.ch/downloads/publications/pdf/en/wvb-nl0601-regulations_on_gmo_in_agricultural_sector.pdf
- Kerr, W.A., J.E. Hobbs and J.D. Gaisford (1997). *The Transformation of the Agrifood Sectors of Central and Eastern Europe and the New Independent States*, Wallingford, Cabi Publishing.
- Kerr, W.A. and A.L. Hobbs (2001) “Taming the Dragon: The WTO After the Accession of China”, *The Estey Centre Journal of International Law and Trade Policy*, 2(1):1-9.
- Kerr, W.A. and E. MacKay (1997). “Is Mainland China Evolving into a Market Economy?”, *Issues and Studies*, 33(9): 31-45.
- Kowalski, S.P. “Agricultural Biotechnology and China: An Unreachable Goal?” *The Journal of World Intellectual Property*. 6(4):665-669.
- Kyne, P. (2002). *Wall Street Worried Over China Bt Cotton Problems*. Organic Consumers Association. available online at <http://www.organicconsumers.org/patent/chinacotton060702.cfm>.
- Letter to the President of the United States from Senators Chuck Grassley, Max Baucus, Richard Lugar and Tom Harkin, June 27, 2002. Distributed by the Office of International Information Programs, U.S. Department of State. available online at http://www.friedlnet.com/images/free_02-07_chinese_rules_on_agricultural_products.pdf.
- Ministry of Commerce of the People’s Republic of China (2003). “Statistics of Imports and Exports of Hi-tech Products by Technology (2003/01-04). available online at http://english.mofcom.gov.cn/article/200307/20030700105579_1.xml.
- Ohio Integrated Pest Management (2002). *China Caves to U.S. Pressures on GE Soybean Imports*. available online at http://ipm.osu.edu/trans/032_181.htm.
- Pray, C.E (1999). “Public and Private Collaboration on Plant Biotechnology in China”. *AgBioForum*. 2(1):48-53. <http://www.agbioforum.org/v2n1/v2n1a09-pray.htm>.

“Senators Urge Bush to Address Chinese Farm Import Restrictions”. *Inside US Trade*. October 19, 2001.

The Economist (2000). “Now Comes the Hard Part”. April 6, available online at http://www.economist.com/PrinterFriendly.cfm?Story_ID=299588.

The Economist (2002). “How Cooked are the Books?”. March 14, available online at http://www.economist.com/PrinterFriendly.cfm?Story_ID=1034342.

“U.S. Pushes for Delay, Clarity on Pending Chinese Biotech Rules”. *Inside US Trade*. August 24, 2001.

United States Trade Representative (USTR) (2003a). *China’s Accession to the WTO*. available online at <http://www.ustr.gov/regions/china-hk-mongolia-taiwan/accession.shtml>.

Wang, H.G. (2002). *Welcome Speech on the 7th International Symposium on the Biosafety of Genetically Modified Organisms*. Speech at the 7th International Symposium on the Biosafety of Genetically Modified Organisms. Beijing, October. available online. at <http://www.worldbiosafety.net/Speeches/Honggwang%20WANG.doc>.

“Zoellick Threatens Possible WTO Case on TRQs During China Trip”. *Inside US Trade*. February 21, 2003.

Endnotes

¹ A fragrant herb used in incense, aromatherapy oils, soaps and perfumes.

² Often public funds will only go to areas in which the government feels will benefit society as a whole or help address serious societal problems. Funds are not usually directed toward areas that would generate the largest profits. It also limits risk taking which can, in turn, lead to considerable forgone benefits for society.