Chapter 7

Trade Policy

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The 2002 food crisis in southern Africa, which was exacerbated by the reluctance of the countries to accept genetically modified (GM) maize food aid, highlighted the need for the region to address the trade-related issues raised by biotechnology, especially given the move toward formation of a free trade area (FTA) by 2008. One feature of the FTA will be the free movement of agricultural products across borders.

This chapter attempts to highlight the key issues related to biotechnology and trade, particularly as they relate to the agricultural sector of the Southern African Development Community (SADC) region. The questions asked include whether there are opportunities for the SADC given that trade in agricultural commodities plays an important role in the economies of these countries. Furthermore, attempts are made to address some of the concerns surrounding biotechnology and biosafety in the SADC.

GMOs and International Trade in Agricultural Products

Trade in genetically modified organisms (GMOs) is highly influenced by the international regulations that govern world trade. The major agricultural countries are countries in the north that have had a tremendous influence in shaping the nature of the world trading system. With the introduction of GM products, it has become apparent that the scope exists for developing countries to benefit from this technology through higher yields, lower production costs resulting from reduction in pesticide use, and, in the case of net food-importing countries, the ability to source cheap food.

World Production of and Trade in GMO Crops

Production of biotechnology crops is concentrated in a few countries, of which developing countries account for 15 percent of the area planted with transgenic varieties. The United States is by far the largest, accounting for at least 68 percent of production, followed by Argentina (23 percent), Canada (7 percent), and China (1 percent). Other countries therefore produce just 1 percent of the total output. The greatest area is devoted to soybeans, cotton, corn, and rapeseed—that is, commodities that are also traded internationally. As shown in Table 7.1, the production of biotechnology crops is concentrated in a few countries; however, the number of importing countries is large in comparison. This illustrates that there is a large market for these commodities given that some GM commodities are processed and their extractions, such as edible oils, cornmeal, and soybean proteins, are used as ingredients in more than 70 percent of the processed foods available in most developed-country markets (Phillips 2003). The International Seed Federation estimated that the value of world trade in GM seed was US$4.5 billion in 2004 (Oxfam 1999).

World trade in GM commodities is concentrated in soybean products (Table 7.2). This is not surprising, because soybeans account for 58 percent of the area planted in GM crops worldwide, followed by corn (23 percent), cotton (12 percent), and canola (6 percent) (Diaz-Bonilla 2002).

Table 7.1 Production of and trade in genetically modified agricultural food products, 2000

Crop	Number of producing countries	Percent of exports from GM producer	Number of importing countries
Maize or corn	8	85	168
Soybeans	6	88	114
Canola	2	50	68

Source: Phillips 2003.

Table 7.2 Estimated percentage of international trade in genetically modified organisms, 2000

Product	Percent
Cottonseed cake	10–20
Cottonseed oil	15–25
Corn	10–20
Soybean cake	25–35
Soybean oil	25–35

Source: Diaz-Bonilla 2002.

As Phillips (2003) observes, those countries adopting biotechnology methods tend to be traditional exporters, and they "thereby increase their exportable surplus, depressing world prices and making nonadopting importing producers less competitive." This is indeed a worrying trend for African countries that want to compete internationally in an already "price distorted" international trading system in which world prices are depressed because developed countries still have highly protected markets and subsidize their farmers.

The International Legal Framework

One of the cornerstones of the Marrakesh Agreement and the subsequent establishment of the World Trade Organisation (WTO) was the introduction of trade regulations for agricultural products. When they become members of the WTO, countries are obliged to follow the rules that are set out in the various agreements that pertain to trade in agricultural products.

There are three legal frameworks relevant to trade in GMO products under the WTO. The first is the Sanitary and Phytosanitary Measures Agreement (SPS), which specifically relates to food safety, as well as plant and animal health. The second is the Agreement on Technical Barriers to Trade (TBT), which deals with technical regulations, voluntary standards, and compliance procedures except when these are defined as SPS measures (Anderson and Nielsen 2000). The third is the Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPS), which sets out standards for intellectual property rights (IPRs) that members must follow.

International standards are encouraged in both agreements where they exist, although the SPS agreement permits the use of risk assessments where international standards do not exist. The TBT agreement is more flexible, as it allows member countries to decide against an international standard based on its own unique situation, such as national security interests. While the SPS agreement allows for risk assessments in the absence of an international standard, it emphasizes that such assessments must be based on science and should not be used as barriers to trade. Yet the major area of contention regarding GMOs is precisely the lack of an international standard, which gives member countries room to adopt trade-restrictive measures regarding trade in GMO products.

The TRIPS agreement (WTO 1994), particularly Article 27(1), specifies that member countries must patent any invention, "whether products or processes in all fields of technology," and that these must be transparent and for a period of 20 years from the filing date. The TRIPS agreement also enables the patent holder to exclude others from making, using, or selling the invention. However, a major weakness is that the agreement does not define an invention.

Complicating matters further is Convention on Biodiversity and its Cartegena Protocol on Biosafety (CPB), which is in conflict with the WTO agreements. The CPB provides for the "safe transfer, handling and use of GMOs that may have adverse effects on the conservation and the sustainable use of biological diversity, taking also into account risks to human health, and specifically focusing on transboundary movements" (Diaz-Bonilla 2002). The major scope of the CPB is the "precautionary principle," its relationship with other agreements, and liability. Although the CPB is yet to be ratified, the precautionary principle gives discretion to countries to establish standards even without full scientific certainty about the problem concerned and allows countries to decide under what conditions they will accept GM products for domestic release.

GM Controversies and Trade

In 1999 a four-year ban was pronounced on new GM crops in the European Union. This decision has led to strong disagreements between the European Union and the United States over the European Union's regulation of GM foods.[1] The United States claims that these regulations violate free trade agreements; the European Union's counter-position is that free trade is not truly free without informed consent. This position has been further cemented by widespread concern within the European Union about GMOs in terms of environmental protection (in particular, biodiversity) and the health and safety of consumers. Many European consumers are demanding the right to make an informed choice. New EU regulations should require strict labeling and traceability of all foods and animal feed containing more than 0.5 percent GM ingredients. EU directives, such as Directive 2001/18/EC, were designed to require authorization for placing GMOs on the market, in accordance with the European Union's precautionary principle.

At the end of 2002, EU environment ministers agreed to new controls on GMOs that could eventually lead the 15-member bloc to reopen its markets to GM foods. The EU ministers agreed to new labeling controls for GM goods, which will have to carry a special harmless DNA sequence (a DNA bar code) identifying the origin of the crops; making it easier for regulators to spot contaminated crops, feed, or food; and enabling products to be withdrawn from the food chain should problems arise. A series of additional sequences of DNA with encrypted information about the company or what was done to the product could also be added to provide more data.

Many European consumers are asking for food regulation (demanding labels that identify which foods have been genetically modified), while the American agricultural industry is arguing for free trade (and is strongly opposed to labeling, saying it gives the foods a negative connotation). They claim mandatory labeling

could imply that there is something wrong with GM foods, which would also be a trade barrier. Current U.S. laws do not require GM crops to be labeled or traced, because U.S. regulators do not believe that GM crops pose any unique risks compared to conventional foods. Europe answers that the labeling and traceability requirements are not limited to GM food, but will also apply to any agricultural goods. The Americans insisit that what the EU is doing is a breach of WTO rules and is "immoral" because it could lead to starvation in the developing world, as seen in some famine-threatened African countries (e.g., Mozambique, Zambia, and Zimbabwe) that refuse to accept U.S. food aid because it includes GM food.

In May 2003 the George W. Bush administration officially accused the European Union of violating international trade agreements by blocking imports of U.S. farm products through its long-standing ban on GM food. A formal complaint challenging the moratorium was filed with the WTO after months of negotiations trying to get it lifted voluntarily. The complaint was also filed by Argentina, Australia, Canada, Chile, Colombia, Egypt, El Salvador, Honduras, Mexico, New Zealand, Peru, and Uruguay. The formal WTO case challenging the EU regulatory system was in particular supported by U.S. biotechnology giants such as Monsanto and Aventis and by big agricultural groups such as the National Corn Growers Association.

In June 2003 the European Union Parliament ratified a three-year-old UN biosafety protocol regulating international trade in genetically modified food, which was expected to come into force in the fall of 2003 because the necessary number of ratifiers was reached in May 2003. The protocol lets countries ban imports of a GM product if they feel there is not enough scientific evidence that the product is safe, and it requires exporters to label shipments containing genetically altered commodities such as corn or cotton. It makes clear that products from new technologies must be based on the precautionary principle and allow developing nations to balance public health against economic benefits.

On July 2, 2003, the European Union Parliament approved two laws that will allow the European Union to lift its controversial ban on GM food. The first law will require labeling for foods with more than 0.9 percent GMO content. It will be applied to human food and animal feed as well. However, animal feed containing transgenic cereals will not be included in the labeling. The second law will make mandatory the labeling of any food contaminated by GMOs not authorized (in the European Union) if the amount is more than 0.5 percent of the total. This amount will be set for three years. After three years, all food contaminated with nonauthorized GMOs will be banned. Traceability of GMO products will be mandatory from sowing to final product. At the time that the ban was imposed, it was expected to be lifted in the fall of 2003.

In May 2004, the European Union lifted the ban on GM food imports by endorsing an application by a Swiss biotechnology company, Syngenta, to import GM corn. The future remains unclear, however. The ban was lifted despite intense public opinion against such an action.

The SADC: Agricultural Production and Trade

Production

Agriculture remains a dominant economic activity in southern Africa. However, partly because most of the region's major staples—such as maize, cassava, and millet—are grown in subsistence-oriented systems, recent droughts and floods have depressed output significantly and threatened food security in a number of countries simultaneously.

According to the SADC Regional Early Warning Unit (REWU), the regional cereal production for the 2001/02 season of 21.75 million tonnes was below the five-year average of 22.44 million tonnes. A further 1.2 million metric tonnes of food was needed in the six countries most affected. In addition, it should be emphasized that a key characteristic of agriculture in the SADC is low productivity. A key question, therefore, is whether the SADC countries can raise productivity to avert dependence on cereal imports from outside the region and increase trade, particularly given the abundance of arable land in some countries.

Trade

The SADC's major trading partner is the European Union, while the United States, Japan, and the Far East are also important markets. Except for South Africa, which has an FTA with the European Union, most of the SADC countries have benefited under the European Union's preferential trade agreement with the countries of the African, Caribbean, and Pacific region known as the Cotonou Agreement.

Under the beef and veal protocol of the Cotonou Agreement, four countries of the SADC, namely Botswana, Namibia, Swaziland, and Zimbabwe, can export a specified tonnage of beef into the lucrative EU market paying only 8 percent duty. The sugar protocol also gives several countries in the SADC, namely Malawi, Mauritius, Swaziland, Zambia, and Zimbabwe, preferential market access to the EU market. There are other provisions as well, such as that granting preferential market access for grapes, of which Namibia is the main beneficiary. Because preferences are restricted to a specific period of the year, Namibia is the only country in the southern hemisphere that has access to this market at a time that coincides with its harvesting season.

Table 7.3 Fast-growing agricultural product areas under the African Growth and Opportunity Act

Product	Percentage increase, 2001–01
Cut flowers	2,258
Frozen vegetables	689
Dates, figs, pineapples	1,468
Fruit juices	1,342

Source: United States Trade Commission, Washington, D.C.

More recently the African Growth and Opportunity Act has provided the SADC countries (except Zimbabwe) preferential market access. Although textiles dominate, trade in other agricultural products is growing. As Table 7.3 illustrates, the fastest-growing agricultural exports are high-value products such as cut flowers, dates, figs, pineapples, and fruit juices.

In September 2000 the SADC launched a trade protocol that aims to establish an FTA by the year 2008. During the past decade intra-SADC trade grew faster than did total SADC trade. It is estimated that between 1991 and 1996 total SADC trade grew at a rate of 13.8 percent, while intra-SADC exports and imports grew at a rate of 23.1 percent and imports at a rate of 17.7 percent (SADC-UNDP 2000). Although this shows some degree of integration, countries of the Southern African Customs Union (SACU)—Botswana, Lesotho, Namibia, South Africa, and Swaziland—dominate these trade flows. South Africa dominates, contributing 94 percent of all SACU exports and 98 percent of total SACU imports (SADC REWU 2002). In 1997 the five SACU countries accounted for 41 percent of SADC exports and 48 percent of SADC imports.

The SADC's major agricultural exports are cash crops such as tea, coffee, tobacco, sugar, horticultural products, cotton, maize, livestock, and livestock products. Imports comprise mainly cereals such as maize, agricultural inputs, and a range of food commodities.

Production of GM Crops in the SADC

South Africa is the only country in the SADC that grows GM crops at a commercial level. Three crops, cotton, maize, and soybeans, which may be insect- or herbicide-resistant, have been approved for commercial release. Currently approximately 200,000 hectares of GM crops are grown in South Africa in areas such as the northern provinces, KwaZulu/Natal, and the Orange Free State. An estimated 28 percent of the cotton planted in South Africa is GM, while GM white maize varieties are about 6 percent of the total maize grown.

Cotton

Bacillus thuringiensis (*Bt*) cotton is grown on 100,000 hectares by 1,530 commercial farmers and 3,000 small-scale farmers (Kuyek 2002). The production of *Bt* cotton is often hailed as a success story, particularly for small-scale farmers. In fact it is estimated that 7 of every 10 South African farmers have switched to GM varieties (Hetherington 2003). Some of the positives listed by South African farmers are that by using *Bt* cotton they have decreased their production costs due to less use of pesticides and that the zero tillage required allows for greater water retention in the soil (Hetherington 2003). Yet the success of small-scale farmers, particularly in South Africa, and the fact that the country imports about 50 percent of its cotton to meet its requirements could be an incentive for other SADC countries, particularly given the advantages provided by the trade protocol in terms of market access.

Maize

Most GM varieties in the SADC have focused on reducing pesticide usage. Trials in South Africa show that the yield advantage of using GM varieties is quite small and varies between a decrease of 7 percent and an increase of 13 percent (MAWRD 2002). In 1999 South Africa planted 50,000 hectares of *Bt* maize. One criticism of *Bt* maize in South Africa is that it has been developed only for commercial farmers and not for small-scale farmers (Kuyek 2002).

Generally the limited research into maize varieties used by small-scale farmers is not limited to South Africa alone. The International Center for Maize and Wheat, with support from the Novartis Foundation, is working to develop *Bt* maize varieties for small-scale farmers in Africa. However, there is a potential problem related to intellectual property rights, as Novartis donated its *Bt* technology for research purposes only.

Policy Issues and Trade-offs

Two sets of policy issues and trade-offs emerge; one set relates to imports, the other to exports. With regard to imports, the key questions are these: How can countries take advantage of cheap GM grain while guarding against possible human health effects? Which are the major traded commodities for which GMOs are important? Are these crops potential import crops for southern African countries?

With respect to exports, it is clear that biotechnology and GMOs may increase productivity and make commodities more price-competitive on world markets. But this may come at the cost of a higher risk of reduced access to key markets, especially in Europe, where consumer sentiment against GMOs is likely to remain high

well into the future. Again, which are the major traded commodities for which GMOs are important? Are these crops potential export crops for southern African countries?

As noted earlier, the SADC's major agricultural imports are cereals such as maize, agricultural inputs, and a range of food commodities. Her exports are cash crops such as tea, coffee, tobacco, sugar, horticultural products, cotton, maize, livestock, and livestock products.

The recent food crisis in the SADC region has highlighted that food security is still a major problem in the region. As the SADC moves toward deeper integration through trade, whether the production of GM crops could alleviate the food security situation in the region is an open question. There are certainly advantages to GM technologies. Even skeptical organizations such as Oxfam agree that "GM technology offers potential to contribute to higher yields and crop productivity of interest to poor farmers and that these opportunities should be researched" (Oxfam 1999). The SADC has among its members net food-importing countries such as Botswana, Lesotho, and Namibia. Because of their climatic conditions, these countries are unlikely ever to be self-sufficient in food production. Cheaper food imports are to their advantage. Moreover, some GM products are extensively processed and are used as ingredients for other products. Some SADC members may question the safety of consuming GM maize; however, there are ways of mitigating the introduction of GM varieties into the environment. The five countries that accepted GM maize meal during the recent food crisis agreed to have the grain milled at specific points before it was distributed nationwide. But it is clear that the information needed to resolve the import-related policy trade-off noted earlier is still unavailable.

The case of *Bt* cotton allows some preliminary positive responses to the question of exports. Clear benefits appear to be accruing to a wide spectrum of farmers, including smallholders, due to increased yield and lower production costs. Byproducts such as cottonseed cake and cottonseed oil also present further income-generating opportunities. But the impact *Bt* cotton may have on the environment remains unclear.

The case of beef is rather different. To protect lucrative markets, farmers exporting beef to the European Union have ventured into traceability programs—for instance, FanMeat in Namibia—to satisfy the consumer demands of that market. While the European Union maintains that its does not prohibit the use of GM feed for cattle, some SADC countries maintain that some European buyers insist on certification that GM feed was not used. Therefore most countries would rather take precautionary measures instead. Moreover, the European Union has introduced a labeling law that requires commodities with a GM content of as little 1 percent to

be labeled. While the U.S. market may be an option, phytosanitary regulations are a hindrance, as risk assessments must be conducted, and these may take several years and are very expensive.

Other markets for beef can be sought; however, the lack of uniformity in sanitary measures in developed-country markets can hinder diversification into other markets. An important aspect is that the EU market offers a premium price for cuts exported under the Beef and Veal Protocol within the Cotonou Agreement.

Many SADC countries that have diversified agricultural production have ventured into horticultural products, supplying supermarkets such as Sainsbury's and Tescos in the United Kingdom. These are obvious niche markets that many producers in the SADC would not want to jeopardize. There is also a growing trend in the SADC for exporters to access the organic market, which attracts premium prices. In Zambia, for instance, the Organization of Organic Producers and Processors of Zambia, which has a membership of 100 farmers, exports vegetables, herbs, and coffee to the European Union and the United States.

Soybeans are another potential export crop for the SADC, as soybeans are one of two crops (the other is bananas) that account for 64 percent of developing country crop exports to developed-country markets. The key exporters of GM soybeans are developing countries, notably Argentina and Chile. Within the SADC, South Africa is a key market, as it has a well-developed agribusiness sector.

The major trade-off for countries that embrace biotechnology is therefore the extent to which this may affect trade with the European Union. It is worth pointing out that despite South Africa's relatively long history of producing GM crops, the European Union remains its main trading partner. The key recognition is that South Africa's agricultural production base is diversified and modern.

Conclusions

There are advantages to the use of biotechnology; however, it is not a panacea for alleviating the food security needs in the SADC region. Apart from developing capacities at national levels, the SADC governments should embrace the need to fully participate in the negotiation of various legal instruments that govern international trade in agricultural products.

It is of no use to increase productivity leading to an exportable surplus if a country has no market access. The current trading system is stacked against developing countries. Developed-country markets are highly protected, their farmers are subsidized, they have highly bureaucratic procedures, and they are expensive to access. Countries that have managed to access the EU or U.S. markets have had to spend considerable amounts of money to do so. Therefore, without addressing issues such as export subsidies and their devastating effects on world prices, trading

with these developing countries would not be of considerable benefit to developing countries. It is in the SADC's interest that member countries act as a cohesive group in areas of mutual interest during negotiations of international agreements. If they could influence the overall world trading system, the SADC countries would not have to rely on preferential market access opportunities alone.

Note

1. The following discussion of GM-related controversies in trade is drawn from a range of sources available on the Internet. An important set of sources can be found at the following Web site: http://www.fact-index.com/t/tr/trade_war_over_genetically_modified_food.html.

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