

# World trade rules affect horticultural biotechnology

Daniel A. Sumner  
Director, UC Agricultural Issues Center

Agricultural biotechnology and globalization seem to go hand-in-hand in the popular press, and protesters condemn both in the same breath. This perceived bond is puzzling to those involved in the international agricultural trade, much of which has little connection to biotechnology. The development and marketing of biotech-related products have no more international linkage than any other area of agriculture.

However, globalization and biotechnology do affect each other. Global relationships between businesses and governments shape markets for biotech crops, which in turn affect rates of scientific innovation and adoption. Agricultural biotechnology has important implications for hunger and nutrition, intellectual property protection, food safety and environmental quality, all with international dimensions.

Innovations developed in one country may be adapted and applied elsewhere. In addition to trade in biotech-related foods and inputs (such as seed), the science itself is traded. Firms export biotech seeds and plant materials for research, planting them where the technology will be applied. Rules facilitate trade by protecting the intellectual property of exporters while securing the human, agricultural and environmental safety of importers. These rules foster widespread benefits from research and development (R&D) investments, while creating research incentives. Global markets are crucial to reap the benefits from scientific investments, reduce global hunger and improve the diets of the poor.

A major promise of horticultural biotechnology is reducing the cost of delivering higher quality fruits and vegetables to malnourished and hungry people. However, today some of this research is being diverted or delayed by international restrictions on trade or use of biotech inputs such as seeds. Some consumers and whole parts of the world have opted out. For example, the European Union banned imports of all new transgenic crops and products beginning in 1998; Japan approves such imports on a case-by-case basis. Several African countries have refused shipments of unmilled genetically engineered grain in spite of widespread hunger and malnutrition.

Despite the controversy, biotech products are subject to the same international trade rules as other agricultural products. The General Agreement on Tariffs and Trade (GATT), administered by the World Trade Organization (WTO), sets rules for all traded



Global markets are critical to reap the full benefits of investments in agricultural research, including in biotechnology. Above, a produce market in Vietnam.

biotech goods. The WTO is a voluntary “club” of nations, with no enforcement mechanism. It relies on members to voluntarily comply with agreements. Three overriding principles of the WTO are that members’ regulations regarding trade must be transparent, not discriminate among WTO members, and not favor domestic sellers relative to imports.

The Agreement on Sanitary and Phytosanitary (SPS) Measures of the GATT recognizes that members establish their own rules for food safety and environmental protection. The WTO Web site notes that SPS regulations “must be based on science; they should be applied only to the extent necessary to protect human, animal or plant life or health; and they should not arbitrarily or unjustifiably discriminate between countries where identical or similar conditions prevail.” The Cartagena Protocol also deals with some aspects of cross-border shipments of biotech-related materials. However, major agricultural exporters, such as the United States, Australia, Canada, Argentina and New Zealand have not ratified the protocol and it does not exempt any nation from GATT obligations.

Although WTO members have wide latitude in specifying trade rules to ensure food and environmental safety, they have nonetheless been subject to formal dispute. The United States and other nations have filed formal proceedings with the WTO concerning the European Communities’ “Measures Affecting the Approval and Marketing of Biotech Products.” Their argument is that the European Union has erected barriers that are not based on the sound application of science and thereby inappropriately block importation of safe products. Related issues concerning, for example, specifics of product labeling, have not yet reached formal WTO disputes, but may be on the horizon.

The dispute has important implications for horticultural biotechnology. The initial costs of ap-

#### For more info:

World Trade Organization:  
[www.wto.org/english/thewto\\_e/whatis\\_e/whatis\\_e.htm](http://www.wto.org/english/thewto_e/whatis_e/whatis_e.htm)

The Agreement on Sanitary and Phytosanitary (SPS) Measures:  
[www.wto.org/english/tratop\\_e/sps\\_e/sps\\_e.htm](http://www.wto.org/english/tratop_e/sps_e/sps_e.htm)

More on the SPS agreement:  
[www.wto.org/english/thewto\\_e/outreach/areupdatepdfs/whatis\\_e/tif\\_e/agrm4\\_e.htm](http://www.wto.org/english/thewto_e/outreach/areupdatepdfs/whatis_e/tif_e/agrm4_e.htm)

Related issues:  
[www.agecon.ucdavis.edu/outreach/areupdatepdfs/UpdateV6N1/N1\\_1.pdf](http://www.agecon.ucdavis.edu/outreach/areupdatepdfs/UpdateV6N1/N1_1.pdf)



Monsanto

Members of the World Trade Organization have wide latitude in specifying trade rules related to food safety and the environment. *Left*, a Monsanto scientist prepares materials for an experiment. *Right*, agricultural products are often shipped by sea.

plied biotech R&D are substantial, in part because governments require costly procedures to assure that the research and testing are safe. Most markets for horticultural crops are quite small relative to major field crops, and the markets for biotech horticultural seeds and other materials are small. When international trade restrictions artificially limit their geographic scope, firms are reluctant to invest in bringing new varieties to the market.

In addition, firms that market horticultural products internationally may be hesitant to support biotech varieties if they believe the market for the final products will be limited to a few countries — especially if the introduction of biotech crop products results in a loss of international markets for conventional varieties. For example, tree nuts and some tree fruits have substantial shares of their sales in Europe, Japan and Korea. Maintaining access to these markets discourages firms from using biotechnology to develop new cultivars.

If trade restrictions and limited market prospects continue to discourage horticultural biotech in developed countries, future investments and planting may occur mainly in developing countries, such as China. However, if major biotech investments were limited to poorer countries, the pace of science would slow and technological benefits would be limited. Further, farms and firms in developed countries, such as the United States, would lose some of their long-held technological edge.

Government restrictions on trade in biotech-related products reflect political choices and are designed to limit the choices of farmers, marketers and consumers. So, for example, if consumers simply did not wish to purchase biotech products or marketers simply did not wish to sell such products no import barriers would be needed to keep the products out of the market.

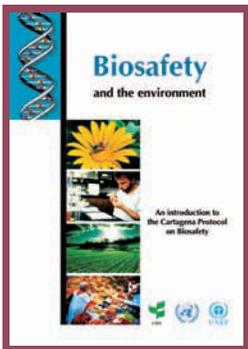
Trade regulations for biotech products have evolved for several reasons. Policymakers may think the products could be unsafe and believe they should therefore restrict their availability to con-

sumers. Domestic forces determine such policies; however, when the policies affect trade, core WTO principles apply. Policymakers may also believe that importation is likely to spread diseases, weeds or other contaminants. This environmental argument applies more to seeds or plant materials than to food. Trade rules similar to those regulating invasive species may apply. For example, governments concerned about potential drift of biotech-derived seeds to native habitat must show that regulations do not harm trade partners disproportionately.

Finally, the pressure to insulate and protect domestic markets is pervasive. Often these pressures come from producers of competing products, but increasingly the pressure comes from groups claiming to oppose globalization *per se*, or oppose certain technologies, *per se*. Accepted trade rules, however, require that WTO members have credible scientific evidence that imports pose a significant potential hazard before trade may be restricted.

Labeling is one way that governments and market participants respond to demands for information about products, including those related to biotech. Private labels are used to encourage consumers to buy products and to enhance profitability. GATT principles apply only to government regulations that surround such private labels. For example, when governments require that label claims have an objective verifiable basis, they must apply the same standard to claims about the safety of imported biotech-related products. Label specifications that are required by governments themselves are more contentious because they can more easily discriminate against imports. In the GATT, governments set label specifications that do not discriminate against imports and have science-based environmental, health or safety foundations. Nonetheless, wealthy countries apply many rules for labeling consumer products and have wide latitude about how they are applied.

Global controversy over agricultural biotechnology has led to a bifurcated market for new technologies. Trade restrictions have reduced adoption and slowed the pace of scientific investment. It is unclear if this bifurcated market will continue or if governments will gradually allow farmers and consumers to make their own purchasing decisions. Government trade restrictions seem unlikely to block the long-term global spread of biotechnology, unless new science reveals some major new concerns. However, for horticultural biotechnology, the most immediate issue is not trade barriers, but market acceptance by consumers and producers in countries that are already open to agricultural biotechnology more generally.



The Cartagena Protocol on Biosafety addresses the international movement of biotech-related materials.