This symposium has addressed some ongoing and emerging issues related to food safety and international agricultural trade, particularly concerning the following:

1. Potential impacts on meat and produce trade created by irradiation application.
2. Recent research on the challenges to the world trading system created by food safety standards.
3. Impacts of European grocery chains on consumer acceptance of GMOs and irradiated food.

My role in the symposium is to identify some of the major implications of food safety issues for the development of applied research and extension programs and set the stage for continued discussion. As Laurian Unnevehr eloquently expressed in her Presidential Address, food safety has become a global public good, its implications are far reaching and cross national boundaries.

- Food trade has been growing in the past decades, with trade in high value products such as fruits, vegetables and meat growing as consumer demand for these products continues to increase. Food safety issues are particularly important for these products. As trade grows, consumers worldwide are increasingly dependent on food safety measures adopted in other countries.

Food trade of a country is affected, even if the food safety crisis occurs in a different country. For example, the discovery of BSE in Japanese cows in 2001 reduced Japanese consumer demand for beef, from all sources. And U.S. beef exports to Japan fell by 23% in 2002. The discovery of BSE in Canada in May 2003 had the reverse effect. As Canadian exports suffered, U.S. beef moved in to meet foreign demand. However, this was short lived with the discovery of a BSE-infected cow in the U.S. in December 2003. Now U.S. beef exports are forecast at only about 441 million pounds for 2004, a sharp decline from the record high of 2.5 billion pounds in 2003 (despite lower exports to Japan where consumer demand had not fully recovered to the pre-BSE levels.)

- Food safety regulations and standards evolve differently around the world as countries respond to food safety crises and prepare for perceived exposure to emerging food safety risks. These depend on countries’ past experiences with food safety, the inherent safety risk levels present in the food supply (based on climate, infrastructure and known disease/pest prevalence), and finally society and industry willingness and ability to allocate resources to reduce the risks (of course depends on the income levels).

- Harmonization of SPS regulations and the principle of equivalence can help countries trade in food products. However, technological limitations can greatly inhibit developing

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1 The views presented are those of the author and do not represent the views of ERS or USDA.
countries from achieving the necessary standards. Controlled atmosphere, special equipment, storage facility can be expensive. Irradiation can present an effective alternative to export safe food with lower costs incurred in infrastructure. However, lack of understanding and acceptance of irradiation and different interpretation of rules requiring labeling have been barriers slowing the adoption.

- Irradiation, though allowed for a variety of products has been used in limited traded products. Importer acceptance is an issue, for example, the EU only allows irradiation of spices.

- Actual risks from potential food safety incidence may be minimal, but consumer perceptions can dramatically influence demand and trade. Therefore, safety measures sometimes may be needed to assure consumers more than to lower risks of a potential crisis.

**Questions for future research**

As standards greater than that needed to assure food safety are adopted by some countries, do increased global adoption of food safety standards lead to a greater fragmentation of agricultural trade or does it enhance globalization? As discussed earlier by Laurian Unnevehr, this is a question that merits some attention.

Another issue that has generated a lot of concern lately is BSE. BSE and USDA have been in the media a great deal. There is some confusion over the new measures implemented by USDA. Testing has been expanded since June 1 2004, but it is not conducted randomly. Participation is voluntary. USDA has also banned all nonambulatory cattle from slaughter establishments. Will this prevent these animals from entering the survey? Is such a testing procedure an appropriate surveillance measure for a country?

Another question that has been on the forefront of many in the industry is with regard to private establishments that wish to implement a higher standard. If an enterprise wants to implement 100% testing for BSE to meet the demand of its clientele and can do so profitably, should USDA prevent it from doing so? This represents another case where the objective of an adopted measure is to assure consumers rather than to significantly reduce risks. If a safety measure is economically justifiable, should it be allowed? Or do policy makers have to worry about gradual unnecessary ‘creep-up’ of safety standards that may impose economic hardships on smaller producers (down the road, as the effect seeps beyond the local and national boundaries)? The domino effect! This leads us to a second set of issues, as follow.

How do food safety standards affect the viability of small producers (note, the U.S. BSE case argument, on the contrary, is that 100% testing helps smaller producers)? Do these regulations promote industry concentration? What sort of burden does this put on the exporting abilities of producers in developing countries?

When there is a food safety crisis, firms may choose to implement standards higher than the national standards. This can have global implications when implemented by a multinational
retailer. Given the growing power of retailers in the food supply chain, products sold on retail shelves generally are required to meet the private safety standards of the retail chain. Again, how does this affect different food producers in a given market? Are smaller local producers excluded? Are there causes for more concerns?

At times government standards may suffice to achieve “scientifically justifiable” levels of safety. But as some researchers in INRA point out, to differentiate themselves and attract customers, European retailers tend to exceed the public standards. As the retail sector continues to get more concentrated, can this lead to a situation where food retailers can potentially pander to public hysteria and unjustifiably prevent market access for smaller producers? Also will this raise food costs and lead to poorer population segments lacking access to affordable products? My observations, in the affluent suburb of DC where I live, the local Giant produce section is increasingly offering only organic products, and cheaper non-organic produce is decreasingly available. What does it mean for the diets of less-affluent population segments?

Therefore, food safety standards have the potential to affect producer viability, trade flows, concentration in production and retail outlets, changes in supply chains, and finally the choice of products and prices facing final consumers. Applied research and extension programs can examine the implications of food safety for these different sectors, at a local, national as well as the broader global level.