Good morning Mr. Chairman, Senators, Ladies and Gentlemen. I am Jim Greenwood, President of the Biotechnology Industry Organization (BIO). I am privileged to be here this afternoon on behalf of BIO. BIO represents more than 1,100 biotechnology companies, academic institutions, state biotechnology centers and related organizations across the United States and in 31 other nations. BIO members are actively involved in the research and development of new medicines, foods, and industrial and environmental products to benefit the lives of people and the environment.

I would like to thank Senator Saxby Chambliss (R-GA) and members of the committee for the opportunity to be with you today, and for organizing this hearing.

The agricultural segment of our industry is celebrating two significant milestones in 2005. First, this year marks the 10th anniversary of commercialized biotech crop plantings, and second, last month we marked the planting of the one billionth acre of biotech crops. These two points help to demonstrate that agricultural biotechnology is the most rapidly adopted technology in the history of food production.

Today's farmers want these new crops to help solve their big "E" challenges: Protecting the Environment, conserving Energy, improving the agricultural Economy, Enhancing crop benefits and improving crop Endurance in the face of disease, pests, and weather. A biologically based agricultural system is a renewable method to conserve our farmland providing opportunities for future generations of America's farm families to remain as stewards of their land, and leaving a softer footprint on the environment which we all share.

In this tenth year of growing crops enhanced through biotechnology, global acceptance continues to increase at a rapid pace. According to the International Service for the Acquisition of Agri-Biotech Applications (ISAAA), in 2004, global biotech crop plantings continued to grow at a sustained double-digit rate of 20% compared with 15% in 2003. The estimated global area of approved crop plantings was more than 200 million acres in 2004.

These crops were grown by approximately 8.25 million farmers in 17 countries, up from 7 million farmers in 2003. But most notably, 90% of the beneficiary farmers were resource-poor farmers from developing countries, whose increased incomes from biotech crops contributed to the alleviation of poverty. This is an unwavering and resolute vote of confidence in the technology. Farmers are masters of risk aversion, and have consistently chosen to plant larger acreage of biotech crops year, after year, after year.

For the first time, biotech crop acreage in developing countries grew faster than developed countries, further increasing the important economic, health and societal benefits realized by these small farmers. Eleven developing countries grew biotech crops in 2004, nearly double the number of industrialized countries (six) growing the crops. In fact, five key developing countries - China, India, Argentina, Brazil and South Africa, are expected to have a significant impact on the adoption and acceptance of biotech crops globally.

We expect these gains to continue at a high rate of momentum well into the future. By 2010, ISAAA projects up to 15 million farmers will grow biotech crops on more than 370 million

acres in up to 30 countries.

Closer to home, the United States is the world leader in the development and planting of these crops. In 2004, American farmers chose to plant 85% of soybeans, 76% of cotton and 45% of corn with seeds improved through biotechnology that allow the plants to protect themselves from insects and disease and promote better weed management. The United States has also approved for commercial planting biotech varieties of canola, chicory, flax and linseed, melon, papaya, potatoes, rice, squash, sugar beets, tobacco and tomato. The annual R&D investment of the six largest companies in the sector is $2.7 billion, or 10.8 percent of sales.

The rapid adoption of this technology by U.S. farmers is a testament to the solutions it provides to problems on the farm. Biotechnology enables farmers to reduce input costs and improve yields. And by freeing farmers from the chore of constantly spraying and tilling their fields to remove weeds, biotech improved crops not only reduce the use of chemical inputs, reduce soil erosion, and reduce the use of fossil fuels; they increase the amount of time farmers have to spend with their families.

A study from the National Center for Food and Agricultural Policy (NCFAP) measured the impact of six biotech crops (corn, canola, cotton, papaya, soybeans and squash) on grower incomes and the environment in the United States. NCFAP found that, compared with conventional crops, the biotech varieties lifted grower incomes by $1.9 billion, boosted crop yields by 5.3 billion pounds, and reduced agricultural chemical use by 46.4 million pounds in 2003.

The growers who gained the most economically were those in the corn and soybean heartland of the Upper Midwest: Iowa, Illinois and Minnesota. But 42 states in total enjoyed some economic benefit from biotech crops. Of the six crops studied, biotech soybeans produced the greatest economic return for growers--an additional $1.2 billion in income.

Biotech corn produced the highest yield gains generating an additional $258.4 million for farmers. Farmers growing biotech cotton gained an extra $413 million in income; biotech canola growers earned $9 million more. Compared to a similar NCFAP study performed in 2002 (based on 2001 data) yield gain resulting from biotech crops was up 41%, production costs fell 25%, and the crops produced a 27% higher economic return.

Biotechnology also contributes to increasing the health of farm animals enabling the production of safer and more nutritious meat, milk and eggs. It also keeps our family pets healthy. There are over 100 licensed vaccines and diagnostic tests developed through biotechnology that significantly reduce disease in both farm and companion animals.

Biotechnology can be used to detect desirable genes in livestock populations. This new tool can improve breeds, help select the healthiest animals for feedlot management and provide consumers with a certification of meat quality. DNA sequencing technology can be used to create advanced animal identification methods to track meat products from birth to plate in a very short time frame (24 hours) thereby protecting consumers from both accidental and intentional contamination of the food supply. Livestock cloning accelerates the reproduction of the healthiest and most productive livestock, allowing farmers and ranchers to breed top quality

animals for food production.

The development and subsequent adoption of this technology could not have been possible without a strong regulatory system to ensure the safe use of these products for both human health and the environment.

We recognize that strong regulatory systems are essential to consumer confidence and we work closely with the U.S. Department of Agriculture, the Food and Drug Administration and the Environmental Protection Agency, all of whom play important roles in providing science-based assessments of our products.

We recognize that this dependence on a strong regulatory system will only increase as we move to the development of what is often referred to as "second generation" biotechnology products.

We also urge the U.S. government to continue to require our trading partners to adhere to international treaties that support science-based regulatory regimes and the intellectual property rules that fuel the innovation engine that drives our industry.

Agricultural biotech research is showing increasing global acceptance. There is research now underway in 63 countries and on every continent except Antarctica according to a December 2004 report by C. Ford Runge, an economist and director of the Center for International Food and Agricultural Policy at the University of Minnesota. According to Runge "the most significant single potential actor in Asia is China, which is aggressively engaged in biotech adoption and research."

A number of biotech crops are approved and could be launched commercially at any time, including rice, soybeans, and corn in China. But it's worth noting that 20 academic institutions in India are researching 16 crops; Indonesia reports planting approvals, field studies and basic research. South Korea has approved corn and soybeans and undertaken a 20-year program of biotech research. Japan has given import approval to six biotech crops and is conducting research in biotech fruits, vegetables and grains. Malaysia in 2004 approved a Biotechnology Agenda, and in Thailand, field studies on cotton, rice and vegetables are under way along with research on cassava, papaya and long beans.

Even Europe is showing forward movement in the adoption of biotech crops. European Union countries were host to 1,849 field trials between 1991 and August 2004. By country, the number of field trials conducted was: 520 in France, 270 in Italy, 263 in Spain, 199 in the United Kingdom, 138 in Germany, 129 in Belgium, 68 in Sweden, 38 in Denmark, 19 in Greece, 16 in Finland, 11 in Portugal, 50 in Ireland, and three in Austria.

Our product pipeline is rich and offers great promise to provide more nutritious and safer foods. More than a dozen agricultural firms are spending millions of dollars to research ways to make our milk, meat and poultry products safer through improved animal health products and diagnostic tools. These products will greatly reduce the number of Americans affected by food borne illness such as salmonella, Listeria and E. coli.

Biotech companies are developing soybean and canola varieties with healthier fat content

profiles, reducing or eliminating harmful trans-fat and saturated fat. Foods are in development which will have higher levels of nutrients, protein and essential amino acids as well as extended shelf-life. And because biotechnology researchers have identified the allergenic proteins in many foods and are developing varieties that delete or disable those proteins, we can look forward to allowing those with allergies to enjoy a fuller diet without fear of an allergic reaction.

Foods that contain vaccines could potentially save hundreds of thousands of lives in regions with frayed or nonexistent health care infrastructures. Products in development include bananas and potatoes that contain a vaccine for human papillomavirus, one of the most prevalent sexually transmitted diseases and the cause of almost all cervical cancer.

Another promising avenue of research is the development of plant-made pharmaceuticals which will allow companies to manufacture novel biologics and therapeutics in plant-cell systems. The technology has the potential to reduce the costs of producing pharmaceuticals to enable increased access to life saving drugs.

New vaccines will reduce food borne pathogens from livestock and poultry on the farm, to further assist in reducing food borne illness in consumers. Cattle resistant to mad cow disease (BSE) are being developed. Pigs are being produced with leaner pork; milk and eggs with increased content of heart-healthy fatty acids are in development.

The greatest challenge of the 21st century will be to feed and clothe nearly 10 billion people in an environmentally responsible fashion. This will require a delicate balance of preserving space and land use for wilderness and wildlife, with agricultural food and fiber production. Nobel Laureate Norman Borlaug has noted that "It took some 10,000 years to expand food production to the current level of about 5 billion tons per year. By 2025 we will have to nearly double current production again."

Many of the current constraints on sustainable production can be overcome with biotechnology, as our increasing understanding of agricultural genetics opens new doors for advancements in yield, quality, and preservation of the environment. This has never been more urgently needed -- in the past decade we've seen a marked decline in the steady productivity gains from traditional plant breeding as the genetic potential of the older production methods reaches its limits.

Biotechnology isn't the only answer to these daunting challenges, but it certainly is a major part of the solution.

The first green revolution is over. Biotechnology opens the door to the second, and necessary agricultural revolution.

Biotechnology will serve this essential role, to allow us to produce more and more healthful foods, on a fixed amount of arable land, in a more efficient manner. The breakthroughs provided by biotech agriculture will reduce soil tillage, fossil fuel use, and runoff of agricultural pesticides into our lakes, streams and oceans.

In closing, biotechnology has a long track record for using innovative techniques to solve long standing problems. Our industry is investing heavily in research and development which will provide products which will promote human, animal and environmental health.

Thank you for giving me the opportunity to provide this information to you today. I look forward to answering any questions that you may have.