Are GMOs Risks and Unkowns Worth It?

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We are part of one of the most noble professions of all man-kind. We are part of a system that brings economically produced food and fiber to our fellow man. Whether you work in a laboratory, a retail outlet, or on a farm, we all should be proud to be part of a system that has helped make this country great and promote healthy living throughout much of the world.

In much of the world there is an abundance, and would could argue, an over abundance of food. In conditions such as these It may be easy for us to forget about the need to continue to strive for productivity. However, in many parts of the world this is not the case. Much of the underdeveloped world still goes to bed hungry, or under nourished. Even in this country, diets high in fat and low in fiber are attributed to many deaths. This past year we added our 6th billionth person to our world. It is estimated that by 2030 two to three more billion of people will populate our planet.

To address these challenges on a wide scale, biotechnology may aid us greatly in meeting our demands for sufficient, safe, and sustainable food supply. However, as this technology has been introduced and grew, so has public debate. Much of the discussion currently focuses on a very controversial aspect of biotechnology, the so-called GMOs – genetically modified organisms – and their use in agriculture.
The potential for biotechnology and GMOs hold enormous potential, as various different events have proven potential to reduce chemical use, improve pest control, or increase self life. In the future, they may improve the flavor of foods, reduce allergens, or improve the nutrition through increased vitamins, better amino acid balances, and alike. While all of this sounds very promising, we are finding that unlike many of the genetic advancements we have made to date, there is growing public concern with the use of genetic enhancement, particularly as it relates to food. This public concern has been aggravated by some activists groups, as well as miss-handling of some food safety issues in some foreign countries.

Having stated this, we must recognize we don't have all the answers to this new technology. The perception of the general public in Europe, and to a much less extent in America, is that this technology is not safe, and there are no benefits to consumers. Whether this perception is real or not, the point is that "we" in industry must do a much better job of engaging, listening to and addressing the concerns of all stakeholders in this global debate. One of the first things we must do is acknowledge concerns about unknown risks. Unfortunately, many in industry have been reluctant to address concerns about the risks of biotechnology. But we have to listen to the people who are now raising alarms. We don't have all the answers and to pretend we do, or to brush off concern as unfounded, is to be arrogant and reckless.
History has shown that new technologies are not without risk. But history has also taught us that the benefits of a new technology can also be much greater than the risks. And the assessment of risks in the light of benefits ought to be the very essence of the current debate over biotechnology.

As a company, and with all those who are willing to participate, we are ready to enter this debate. Let us be straight forward, so that there can be no misunderstanding of our position and our objectives:

- DuPont/Pioneer is on a journey to become a "sustainable growth" company – one that creates increasing shareholder and societal value while reducing its environmental footprint – what many refer to as environmental impact. Biotechnology will be a critical enabling technology for us to achieve "sustainable growth."

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- The current public debate over biotechnology has been narrowly focused on the genetic enhancement of food and primarily about risk. This debate needs to be expanded to include the broader potential uses of biotechnology, and to include a full discussion of benefits as well as risks.
- Public concerns must be addressed openly, and steps must be taken to ensure that biotechnology, in all areas, is developed and used safely.
- At Pioneer and DuPont we need to take steps to enrich the debate by introducing to the discussion market realities and human needs, without which any debate over this technology is abstract and hypothetical.

What are those realities? Below are a few specific examples of where we believe biotechnology will have the most value in the future and then describe the commitments we are making today.

Nutrition and Health

Today, nutrition and health benefits beyond those available naturally in foods are provided to society through pharmaceuticals and vitamin supplements. In the future, the potential exists to provide these benefits to a greater part of the world, at significantly lower cost, through foods.

One example involves milk. Today, over 4 billion people do not have access to refrigerated milk. To meet this need, both powdered dairy milk (casein) and now powdered soy milk are available. We have developed an improved soy milk that provides high quality protein, at lower cost than traditional powdered milk. It is lactose-free, an important benefit to the many who must avoid lactose. And, it tastes good, overcoming a problem that has traditionally plagued the broad use of soybeans.

We believe that soy foods in many forms will be shown to be important to reducing the risk of certain types of cancer – such as breast, colon and prostate – as well as reducing the risk of coronary disease and osteoporosis.

A recent development by a team of scientists at the Swiss Federal Institute of Technology in Zurich is very exciting. This team has succeeded in inserting seven new genes into rice. These genes, which come from different plant and microbial sources, encode enzymes and proteins that give rice the ability to make beta carotene and also allow the kernels to accumulate extra iron in a form that the human body can better absorb. This is important because vitamin A deficiency affects 400 million people worldwide. And iron deficiency – the number one micronutritional shortage, which a diet of rice can exacerbate – afflicts more than 3 billion people around the world. This does not mean that the technology is ready for commercialization, but it does indicate the potential benefits that molecular biology can bring to some of the most pressing human health problems facing the world.

Agricultural Productivity

One of the great success stories of this century has been the increase in agricultural productivity. Today, we are feeding more than twice as many people as we did in 1950. But arable land is disappearing around the world. Agronomists look at how much land is theoretically available for farming, and even if every acre is maximized using conventional agriculture, we start to come up short if we have to feed 8 billion people in 2025 and beyond.

The benefit of "more food" is a difficult one to sell today as we meet here in the northeast United States, in the middle of oversupply and historic low prices even after having suffered one of the most severe droughts on record. But the day will come when land limitations will require significantly greater yields than are available today.

The Rockefeller Foundation is addressing many of the food supply needs in developing economies. It has funded more than $100 million of plant biotechnology research and trained more than 400 scientists from Asia, Africa and Latin America. Rockefeller Foundation-funded

researchers in Mexico have added genes to rice and maize to increase tolerance to aluminum – a soil toxicity problem that blights vast areas of the tropics. In India, scientists have added two genes to rice which appear to help the plant survive being submerged for long periods, a common problem in Asia.

To meet these future needs for safe and plentiful food, we in DuPont/Pioneer plan to improve our ability to provide crop protection products that fight plant disease and insect attack, and selectively control weeds using lower and more specific doses of our products. We will also offer many of these same and improved benefits through seeds created using modern genetics. We also know that the use of organic farming has grown and that we must understand how we can contribute to, and learn from, this part of the market. And we plan to look for alliances and partnerships where we can make meaningful contributions to countries and regions of the world where food scarcity is a daily occurrence.

Bio-Based Materials and Processes

The potential of modern biotechnology to lower the impact of society on the planet, while enhancing the quality of life of a broader percentage of the world's population, is enormous! Biological processes use renewable resources as feedstocks, use solar energy to drive growth, absorb carbon dioxide from the atmosphere, use low temperature and low pressure processes, and produce waste that is less toxic.

At DuPont/Pioneer, we currently have three main areas of research in this area:

- We are studying the potential use of "green plants" as manufacturing plants to make useful chemicals. For instance we may one day be able to create a bio-silk that grows in plants. And we are also looking for the genes that control the synthesis of natural rubber that would enable us to use plants commonly grown in this country as a source of that material.
- We are studying microbes as "programmable" manufacturing factories to make chemicals, monomers and polymers from different nutrient feedstocks. Current feedstocks for these materials are petrochemicals from oil. We are programming microbes to make very sophisticated polymer building blocks and molecules out of simple, renewable feedstocks, like glucose and methane.
- We are applying biotechnology to create products with new or improved product functionality. One very exciting area is the interface of biology and electronics. Using DNA-based science it may be possible to manufacture much smaller electronic devices than currently possible – smaller by a factor of ten. This is the kind of change that would be a genuine technological leap. We are also looking at developing biosensors using properties of enzymes to create more sophisticated diagnostic tools.

Biotechnology offers us the flexibility to shape our commercialization strategies to meet the changing needs and wants of the consuming public. This may be through improved seeds, foods and pharmaceuticals, as well as through chemicals, polymers and other materials made using processes with lower environmental impact fed by renewable feedstocks and fueled by renewable energy.

At DuPont and Pioneer, we believe so strongly in the importance of this issue that today we are committing to:

First, we will engage, listen and adjust. We will create a global, biotechnology advisory panel to guide our actions, help us create positions on important issues, and guide and challenge us in the development, testing and commercialization of new products based on biotechnology.

Second, we will advocate informed consumer choice through meaningful information and product assurances. Consumers are always the ones who make the choices. However, more and better science-based information must be made available to help with these choices.

This is where I encourage everyone involved in agriculture to involved. The population that is actively involved in farming is only about 2% in the U.S. However, those of us that support the production, processing and distribution of that food supply extends much wider. The first thing that I suggest we do is educate ourselves on the issues, which is what this morning's session has been all about. Secondly, we must let this knowledge spread to our friends, relatives, and neighbors. The media can reach thousands of people instantly. However, the effectiveness of individuals can help foster real knowledge of the issues of biotechnology, while reducing the sensationalism and fear, and help us, as a country and world, chart a future course of prosperity and safety.