Introduction of Genetically Modified Wheat into Society: *A Lose, Lose Situation*

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"Is our industry willing to risk 40% of our sales of regular business to embrace genetically modified wheat? The answer is no." – Len Hefflich, Director of Technical Services, George Weston Bakeries

Introduction

Like it or not, transgenic wheat is upon us. Biotech companies, such as Monsanto, are planning on releasing another untested, unproven, and unsafe genetically modified product onto our soils in the form of hard red spring wheat. This report is designed to point out the negative affects of introducing genetically modified wheat into our society. Specifically discussed will be the environmental effects, the economic effects, and the fact that there are no benefits to farmers or consumers using these products that can justify the tremendous consequences that will come about in introducing genetically modified wheat. The focus of this paper is to urge readers to really think of the future of agriculture in the United States when they are deciding whether or not to allow the use of genetically modified wheat products to take over their fields.

Environmental Effects

Due to the direct nature of wheat consumption, there has been increased leeriness to the introduction of herbicide resistant wheat. This is wheat that has been modified to tolerate the glyphosate-based Roundup Resistant weed killer. It was intended to improve efficiencies and increase the farmer's profitability, although due to the consumer's uncertainty, has not yet been introduced. Some of the consumer issues involved in the introduction of genetically modified wheat

include a variety of allergic reactions, contamination of nearby fields, antibiotic resistance, and various other unknown effects.

It is plain to see why the public is reacting negatively to the introduction of genetically modified wheat. Because of poor research funding and dominating controls it has been hard for the general public to take a stand on the usage of genetically modified organisms. Just 2% of the USDA's funds for biotechnology research are allocated to risk assessment and risk management of genetically modified organisms (Roseboro, 2004). With so little funding from the USDA, researchers need the necessary support and funding from biotechnology companies. Although, as some researchers have found, if findings go against what the biotechnology companies are looking for, funding will quickly cease. The lack of research funding means that any affects, negative or positive, that could be discovered will not be determined until it is too late.

Genetically modified foods in general should be a concern for anyone who suffers from a food allergy because these foods are not tested, regulated, or required to be labeled in the United States. Common food products that have been genetically modified that cause common allergies include eggs, milk, fish, peanuts, shellfish, soy, tree nuts, and wheat. Genetically modified food products are produced by splicing foreign proteins into common food products. Since most allergic reactions are caused by a food protein, the new genetically modified foods which have never been consumed or tested for human safety, present a threat for allergen sensitive consumers. It is estimated that 2 – 2.5% of the general population, or 5.4 million to 7 million Americans have food allergies.

Those that have wheat allergies must read labels to avoid any products containing flour, bran, wheat germ, wheat starch, or gluten (Allergic Reactions Central, 2003). Products anywhere from bake goods to luncheon meats contain these ingredients and must be avoided by the people who suffer from a wheat allergy.

Antibiotic resistance is another safety concern for the consumers of genetically modified wheat. Foreign genes are often "marked" with an antibiotic resistant gene to help determine if the first gene was successfully spliced into the host organism. The concern comes from the fact that these antibiotic resistant genes could recombine with the disease causing bacteria or microbes in the environment. The environment could be the gut of an animal or human, whichever consumes the genetically engineered food. This would only contribute to the rising health issues of antibiotic resistant infections.

The other unknown effects of genetically modified wheat are endless. The scary part is, once the product is introduced into society, it appears that it will not be able to be contained. Scientific evidence suggests that wind, insect pollinators, birds, rain, and possibly even cattle can carry the genetically altered pollen into fields consequently polluting the DNA of the fields thought to be "GM free". Wheat pollen research has proven that pollen can travel up to 2,624 feet or about a half a mile. Because of the contamination issue, the unknown effects of genetically modified organisms will pose greater insurance risks. The possibility of contaminating neighbor's fields and the loss of markets are unforeseen risks for the insurance industry. Some countries have looked into the

possibility of insurance against damage from genetically engineered crops. For example, in Spain, companies which produce or plant genetically modified crops have to contribute to a fund intended to cover environmental accidents such as contaminating other non-genetically modified fields. Also, the world's second largest insurance company in Switzerland has mentioned the problem of risk assessment concerning genetically modified organisms and how they cannot be covered with classic liability insurance models.

Until there is a greater emphasis placed on research funding, the affects of genetically modified wheat will remain unknown. As consumers, we must take precautions and be aware of what we are providing for the next generation to consume.

Economic Effects

This section will take a look at the effects of the introduction of genetically modified wheat into a specific state, North Dakota

According to the North Dakota Agricultural Statistics Service, thirty-eight percent of North Dakota's economic base is attributed to the agricultural sector. The agriculture sector is the highest percent of gross state product in North Dakota. Because agriculture represents a significant portion of North Dakota's economic activity, the state is acutely affected by the performance of agriculture from year to year. (Coon, Leistritz, Majchrowicz, 2000)

About half of the United State's hard red spring wheat is grown in North Dakota, with sixty to seventy percent of those crops being exported (Lydersen,

2002). Under an international agreement known as Bio-safety Protocol, countries are allowed to ban the import of genetically modified crops. Since countries such as Japan, South Korea, Taiwan, the Philippines, and many European countries are afraid of the unknown affects of human consumption of genetically modified products, they do no want genetically engineered wheat. Top buyers from these countries have repeatedly indicated that they won't buy wheat from North Dakota, or even from the United States, if genetically engineered wheat is commercially introduced into production (Wisner, 2003). Japan, alone, is the number one buyer of North Dakota's hard red spring wheat, purchasing approximately fifty million bushel a year (Gillam, 2004). Representatives of the Consumer's Union of Japan, along with others from Japanese environmental and consumer groups met with state and federal agricultural leaders in North Dakota on March 26, 2004. The Japanese Delegation, led by Keisuke Amagasa, stated that Japan would stop buying wheat altogether from the United States and would buy from other competitors like Canada and Australia to avoid any risk of biotech wheat (Gillam, 2004). This could lead to disastrous results for both North Dakota and the United States.

A study prepared by Robert Wisner, Ph. D., a leading grain market economist at Iowa State University, shows that the introduction of genetically modified wheat will pose a major risk to the United State's wheat industry. After examining past and present data on markets, consumer trends, and grain handling and transportation systems, Wisner concluded that the commercial introduction of genetically modified wheat could result in a loss of thirty to fifty

percent of the United State's hard red spring wheat export markets (Wisner, 2003). If this were to happen, it is estimated that the prices of wheat would fall approximately one-third lower than they have been in recent years to that of domestic feed prices, which would result in a huge devaluation (Wisner, 2002). If crops don't sell, many farmers could go unpaid. Grain elevators and machinery could be rendered useless and even demolished because of contamination from genetically modified crops (Lydersen, 2002).

Factors such as price changes and foreign trade can drastically affect the net income of the North Dakota farmer. With the introduction of genetically modified wheat and the resulting loss of export markets, farmers will find an excess supply of hard red spring wheat on their hands. Most will sell for one-third the price to feed markets if they can. Others won't sell at all because there will be no buyers. As a result the North Dakota farmer's net income will be reduced as well as the economic base of North Dakota.

Lack of Benefits for Farmers and Consumers

Another important issue in the introduction of genetically modified wheat into society is the lack of benefits for both farmers and consumers. Consumers gain virtually nothing. In the United States, genetically modified products don't require special labeling. Without labels, consumers can't see any benefits. For farmers there are many issues hindering the benefits that they may gain by planting genetically modified crops. One issue is cross-pollination between genetically modified crops and non-genetically modified crops. Another issue is

who is liable when these crops do, in fact, cross-pollinate. Also, the consumer ultimately decides whether or not a product will be successful, meaning that if they are scared of the unknown effects of genetically modified products, they can choose not to buy them. There is also concern for both the farmer and consumer together; this issue is the mistrust that can happen between the farmer and consumer.

Many consumers have concerns about the safety of eating genetically modified food products because the products have not had any long term testing (Wisner,). Another concern is that genetically modified products do not need special labeling. In the United States producers of products that contain genetically engineered organisms do not have to label them because genetically modified products are considered to be “significantly equivalent” to similar non-genetically modified products (Abengoza,). It is also believed that if producers did label the products that contain genetically modified organisms, consumers would feel that the product was unsafe and would not buy it.

A big concern for farmers to consider is the issue of cross-pollination between genetically modified crops and those crops that are not genetically modified. Right now, it seems as if it is the traditional (non-genetic) farmer’s problem if their fields are contaminated by their neighbor’s genetically modified crop. Liability is a big fear because there is nothing that says who is at fault when contamination happens. There have been cases when a traditional farmer experiences contamination from their neighbor’s genetically modified field and is sued by Monsanto for planting saved seed. Usually, the farmer has no way to

prove that they have not planted saved seeds, and lose the case. Another concern that farmers should have, is that the consumers really have the last say on whether or not a product will be successful. When considering the introduction of genetically modified wheat, a guiding factor should be that "the actual market is the consumer rather than the grower who produces the product." Producers better hope and pray that the market (consumer) will accept what they are growing after the seed has been purchased and planted (Wisner,).

Some issues for everyone to think about are the mistrust that will occur between farmers and their consumers, since wheat is a major food crop and foreign countries are against the introduction of genetically modified wheat (Abengoza,). This mistrust is due to the lack of labeling and the uncertainty of safety of these products. As opposed to genetically modified soybeans and corn, genetically modified wheat is a food crop. Since this is new, people are worried about the long-term affects that could arise with the consumption of these products.

Conclusion

The corporate world would like to force the new genetically modified products onto the market. A lack of education on the important agricultural issues is to blame for the seeming apathy shown by the majority of the public. In the preceding report, these issues were brought to the table, examined, and shown to favor a halt on the introduction of genetically modified wheat. Until it is proven that the introduction of this product will not create any long term effects on the environment and in humans; and consumers of these products can go

worry free, it is not worth the drastic decrease of our economic base. Please take to heart the issues brought up in this report, and remember as citizen of the United States, we need to make decisions that will benefit our future as a country.

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