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## **China:The dispute of transgenic technology**

### **Definition**

Transgenic technology is a new developing technology that transfer some helpful genes from one creature to another with some specific biochemistry and molecular biology methods. By these methods we can modify the genetic material of the creatures to improve their properties, nutritional content and economic value in order to meet the demand of human beings. The definition of transgenesis is more extensive than transgenic technology. It includes the transformation of genes which can happen without the interference from humans. For example, it happens when phages attack bacterias. According to the object, transgenesis can be divided into three types: floristic transgenesis, creaturely transgenesis, and microbial transgenesis.

### **Background and Arguments**

With the rapid growth of the world's population and the rapid decrease of cultivated land, food problem becomes one of the austere problems we humans are facing. The naissance of genetically modified food makes it possible for scientists to improve the crops. However, as the saying goes ,every coin has two sides , though the new technology brought a revolution worldwide, it also started an unstopping debate about its safety.

The technology of genetically modified food was first born in 1970s, America, since then, the technology has been developing at tremendous speed. In 1994,the first batch of transgenic tomatoes was put into commercial production. It made such a big stir in the world that a lot of countries begin to import the transgenic technology. The history of transgenic technology in China began in 1984,about 30 years ago. China is the first country that put this technology into commercial production: in 1992, China put the production of tobacco into commercial production, after long-term experiments.

Up to now, the technology has been applied into many areas. One of them is pharmaceutical industry. Scientists use it to develop the genetic engineering vaccine, which saved a lot of people's lives. The invention of recombinant human insulin is also a good example. The technology is also commonly used in food production . Whether the technology should be used in the food area triggered an argument which is still being disputed. But, it's undeniable that the genetically modified foods do have a lot of advantages. The technology can improve the physiological anti-adversity of the croppers. It can also improve the yield of some economic crops such as soybeans , cottons, and help the plants to prevent the attack from natural disasters and pests.

The argument about the safety of genetically modified food becomes hotter and hotter during recent years which attract a lot of people's eyes. On July 14<sup>th</sup> this year, the United States Congress issued an act aiming at labeling the genetically modified foods forcibly , triggering an extensive discussion.

Sometime earlier, more than 100 Noble prize winners wrote a joint letter, stating that they are in favour of GMO (genetically modified organism) ,asking the Greenpeace to stop opposing the genetically modified organism (especially the Golden Rice).

The argument in China is also very intense. The famous compere, Cui Yongyuan, has been fighting against the unbridle growing of genetically modified food for quite a long time. Cui’s concerns show a common phenomenon among a quite large proportion of the people in China. But the scientific community holds positive attitudes to the genetically modified organisms.

## **Facts and Current situations**

With the rapid development of the transgenic technology, scientists can have a more rational understanding towards genetically modified food . Further research shows the following points:

### **1. The safety**

Safety is the most controversial point people are arguing about. Some people think that genetically modification may pollute the foods. Some of them are even afraid of the danger of being yield because it is said that genetically modified organisms don’t have the ability to procreate. Are those rumors true? Through deeper research on the Internet and through the communication with some experts, I find that the answer is “no”. Genetically modified plants can still produce seeds. The seeds can do whatever the normal seeds can. They can sprout and grow, too. The safety of genetically modified food should be scientifically understood. Up to now, the safety of genetically modified food is still intangible. No one can promise that it has no detriment to us human beings. It is undeniable that genetically modified organism has a lot of great specialties. But there is still not a final conclusion that whether it will cause some potential risks. There are some resistance genes , reporter genes and over-expressed genes that may influence the expression of other genes so that some allergens may form. People who eat these foods may have hypersensitive response. Genetic pollution is another problem to be worried about.

After all, there is no virtual reproductive isolation between the genetically modified crops and the normal ones. This may cause the damage towards the ecosystem. Also, some unexpected genetic recombinations may produce new species that are harmful to the human beings. The super weed is an outstanding example. In a word, the safety of transgenic technology should be treated cautiously.

## **2.Obstructions in future development**

### **A. The constraint of some concepts**

Because of the complicated social environment, many people don’t know what the transgenic technology actually although the technology has been progressing rapidly since its birth. Then essentialism begins to take control of people’s attitude towards the new technology, which makes them consider DNA(Deoxyribonucleic Acid) as the ‘essence’ of all creatures—imperceptible and unchangeable. In a lot of people’s sub consciousness, when a gene of one creature is transplanted on another, the typical character will be transplanted, too. Which makes them afraid of the technology for some unscientific reasons.

### **B. The duality and immaturity of transgenic technology**

As we have mentioned in the foregoing, although the transgenic technology is becoming more and more mature, we still have to worry about the potential risks this technology may bring to we humans and the nature. Limited by the development of technology, scientists can't provide comprehensive assesses towards the genetically modified organism.If government hastily put genetically modified organisms into commercial production before official verification is released, genetic pollution may be caused , which may damage the whole ecosystem.

### **C.The loopholes of relevant policies.**

It is shown that more than ten rules and regulations have been enacted during previous decades, based on the principle of safety, pro-environment and global engagement. But because of the lack of supervision and efficiency, those policies can't play their biggest roles and turn into pieces of wasted paper.

### **D.The argument about benefit**

Benefit is always the key points of some arguments. There are plenty of interest groups behind each argument. In fact, the study of the safety of genetically modified food is led by big biotechnology companies. A large number of scientists are even the shareholders of some big companies. That leads to the birth of different interest groups. Netizens, especially those who are not well educated are likely to be deceived by the rumors on the internet, making them hard to decide which information is right or not .

### **E:The interference from the “conspiracy theory”**

The cautious and responsible attitudes towards this new technology are sometimes misinterpreted by public opinions. Then the conspiracy theory began to cause a temporary clamor. The conspiracy theory is further magnified especially in China. Overwhelming rumors are almost everywhere. Here are some examples.

1. Americans plant the genetically modified organism only to export.(Some people even vowed that the genetically modified food are mainly prepared for the Chinese)
2. Scientists are bribed by some evil forces to reach some ulterior motives.

Actually the rumors completely do not have realistic basis. But some uneducated farmers or citizens are puzzled by those conspiracy theories. The public's strong dissatisfaction with the degree of openness of government unavoidably connects with the problem of transgenic technology, making the public more and more worried.

### **Defining a typical household**

Through deeper research in genetically modified food , large amount of farmers in rural areas are contracted with scientific institutions . Here is an example in Huojia village , Loudi town, Luancheng area, Shijiazhuang ,Hebei province. Wang Hongzhi, a 62-year-old man, owns a 5-mu field of genetically modified corns. His wife is also a farmer. They work together to make the corns grow better. They had three daughters, all working in the city. The old couples don't have a lot of money,

but they lead a happy life together. Three mu of his field is planted with corns , another part is planted with wheat. The fields are cultivated by intercropping The mature crops will be sent to the lad to do some studies. Rest of them will be used in commercial ways. Through a year's hard work , the couple can earn about 24000RMB , which are available for them to survive. And they can live better with the help of the welfare system.

There are many other typical families like Wang's family, with the help of the welfare system and their hard work, they can lead a happy life by growing the genetically modified corns.

## **Solutions**

Transgenic technology should be considered as a science project instead of a social problem. As Dr. Yuan Longping, the father of hybrid rice said, we should "Be vigorous in researching, while cautious in generalizing. Transgenic technology still have a long way to go in order to be accepted by the public and bring benefit to the people all around the world.

### **1. Accelerate the development of science and technology**

As an emerging technology, transgenic technology still needs to be improved. The cognition and comprehension towards the genetically modified organisms are still limited up to now. Limited by equipment and time, a lot of studies are shelved. For example, for transgenesis, whether the exogenous gene can be transformed to the exact position and whether the exogenous gene can express exactly(especially the second problem) can be answered by no one because of the boundedness of technology. It's hard to popularize transgenic organisms unless these problems are solved.

### **2. Respect the opinions of the public and improve the education of transgenic technology**

Any nations or groups will be doubtful and hold wait-and-see attitude in face of new things, so as the Chinese, it is not strange. At the same time, genetically modified food has its own features. For example, genetically modified maizes can prevent the attack from bugs by poisoning the bugs who try to eat them. Some people may begin to worry about the safety if they eat the maizes. Long-term science communication will be needed in that case. Actually, respecting the public opinion is more than allowing the public to be informed (that is to say, spread science knowledge and theories to the public), many other elements also included. Firstly, the public should be allowed to query and wait-and-see. Secondly, they should be allowed to make choices. What's more, professionals do not have to use extremist opinions that may cause the disgust from the public.

### **3. Improve functions of the government**

It is the government's responsibility to guide the development of transgenic technology. Although a number of rules and regulations have been enacted during previous decades, their functions didn't achieve the desired results. It is necessary to improve the degree of openness of government, which will make the public soberer, making sure that they will not be controlled by some rumors and the conspiracy theory. More vigor should be paid to improve market supervision, taking the responsibility to detect the import and export strictly. The government should also strengthen the people's awareness of the transgenic technology, making them know the new technology in a more rational way.

### **4. Draw lessons from foreign experience**

Countries like America have a longer history in planting the genetically modified organisms. Those countries are more expert than China. The Chinese scientists and the government should draw lessons from other countries which have more advanced technology , and combine the valuable experience with our own situations.

### **Conclusion**

It's undeniable that the world need transgenic technology to fight with global hunger. All sectors of the society should reach an agreement on the development of the transgenic technology, work together to make this world a better place without hunger. All trial to put genetically modified organisms into commercial production should be based on the principle of security. China has the responsibility as the country with the largest population, fight for our shared future.

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