

GM Papaya and Biotechnology Regulation in China

1. Introduction

Investment from Chinese public sector in Bio-technology has been increased fast since the beginning of 1990s. With this large injection of funds, the commercialization of GM products also expanded from non-food crops, like cotton to fruits and food crops. Paralleled with the remarkable progress in R&D and biotechnology expansion, like Bt cotton, China's government have established a comprehensive system of biosafety assessment, management and supervision at national level. However, the results obtained from the survey on the production of GM papaya (GMP) conducted in southern China suggest that the enforcement of biosafety regulation is still weak at local level. There are also great rooms to improve seed production and marketing, the diffusion of new GM varieties, and marketing of GMP products.

2. Data and Surveys

To meet the objective of better understanding the status quo of GMP, we conducted four surveys. This data collection was necessary because there is not any official statistics to record the planting of non-GMP and GMP. Furthermore, it is of importance generating policy implications for China in moving its GM crops from non-food GM crop, like GMP to food crops in the coming years. Four surveys include: 1) interviewed major stakeholders (e.g., policy makers and research institutes that generated the technologies related to GMP) with special attention to the information required for the biosafety management, the process of GMP commercialization and policies governing GMP production and marketing; 2) papaya producers' survey in Guangdong, Guangxi and Hainan provinces; 3) laboratory tests of GMP or Non-GMP; and 4) consumers' survey on consumers' willing to buy GMP in three cities of Guangdong province.

3. Major Findings

Regulation on the R&D and Commercialization of GMP

The R&D of GM papaya in China strictly follows the biosafety regulations. These regulations include "Regulations of Genetically Modified Organisms Safety" (State Council, China, March 14, 2002) and other documents issued by Ministry of Agriculture (MOA). One variety of ring spot virus resistant GMP (Huanong No.1) has been approved for the commercialization and its process involved five stages: obtaining the transgenic material; small field trial (1 mu or 0.067 ha); enlarged field trial (4 mu or 0.268 ha); pre-production trials (30 mu or 2 ha); and the approval of commercialization in Guangdong province for the period of 20 July 2006 and 20 July 2011.

The Regulation on the Production and Market Products

Papaya is not listed in the directory of "Regulation of Genetically Modified Organism

Safety” even the GM papaya has been officially commercialized in China since July 2006. This suggested that there is no request of GM labeling on papaya’s seed, seedling and products. Thus, for the papaya seed and seedling, none of the seedling cultivating or marketing companies has labeled if the seed or seedling is GM varieties. All of the farmers in the sample did not label the papaya as GM or not.

Varieties of GMP Adopted by Farmers

According to laboratory test, among 211 papaya samples, only 1 sample is non-GMP while the rest 210 samples, categorized into 26 varieties, are GMP. Obviously, among 26 GM varieties, only one-“Huanong No.1” is the legally approved GM variety in Guangdong province. GM varieties that have not gone through biosafety regulation have been widely adopted by farmers in three major papaya production provinces.

Farmers’ Knowledge on GM Papaya

Despite of rapid expansion of GM papaya in the study area, farmers have very limited knowledge on GMP technology. Three fourth of farmers even did not know that they actually planted GM crop. Interviews with seedling dealers and traders revealed that they seldom took effort to extend GM knowledge to farmers because no legal binding was imposed on them to do so. Quantitative analysis shows that more knowledge of farmers on GM papaya, more benefits gained from adopting GM papaya through their less use of pesticides.

Consumers’ Willing to Buy GM Papaya

Based on a survey covered 465 consumers from Guangzhou, Zhongshan and Meizhou cities in Guangdong province in 2010, half of them were willing to buy GM papaya, and 45 percent of consumers regard GM papaya with the trait of anti-disease acceptable.

4. Policy Implications

Based on the above findings, this study has the following policy implications.

Enhancing Biosafety Regulation

GM papaya biosafety regulations should be enhanced at different aspects. Because majority of GM papaya’s seedlings, including the legal or illegal ones, were sold by the institutes engaged in the R&D of GM technology, the experiments of GM technology should be recorded and the market channels of seeds and seedlings of GM products within and outside of the institutes should be tracked. China may also consider to establish permit system for those firms or institutes that have capacity and credibility to release GM papaya varieties following the national biosafety regulation rules. More strictly regulation can also be enforced at the board for the import GM papaya varieties. It is compulsory to check if the imported seed or seedling has been approved for the commercialization in China.

The regulations of randomly sampling of the seed and seedlings imported or marketed by the companies should be strengthened. It is subject to justify if industries and

individuals illegally import and market the seed and seedlings of GM products.

Implementing Voluntary Labeling System

Our study showed that half of the interviewed consumers are willing to buy GMP. The voluntary labeling system of GM products has been implemented in US, Canada, Argentina and Hongkong. Thus, voluntary labeling system in regulating GM non-food crops is recommended while the details in practice still deserve further study. The experiences which will be obtained from the labeling of GM non-food crops will be of importance to commercialization of other GM foods.

Improving GM Technology Extension Service

Knowledge and information on GM papaya technology are essential for farmers to gain more benefits from the technology. Local extension staff and seed industry or dealers should be trained so that they can provide farmers right information on traits and function of the trait for each variety of GM papaya.