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Genetically Modified Food Labeling in China: In Pursuit of a Rational Path

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ABSTRACT

Facing a tension between the increasing use of genetically engineered or modified food and consumer concerns over the risks associated with GMOs, China has established a GM food labeling regime through regulations—known as Agro-GMO regulations—to protect consumers' right to know. However, the design and enforcement of this GM food labeling regime is problematic. As a result, the labeling regime is ineffective and inconsistent, leaving consumers' rights unprotected. As the recently amended Food Safety Law in China requires GM food labeling for the first time, this article argues that China should replace the current Agro-GMO food labeling scheme with a special regulatory scheme. A comparative analysis of the GM food labeling systems in the European Union and United States, coupled with a rigorous examination of the problems and barriers of GM food labeling in China, sets a solid foundation by which to propose changes to incorporate into a special regulatory scheme. To this end, this article engages in such an analysis and recommends practical steps to guide the enactment of a special regulatory scheme. The recommendations comport with China's unique legal and political culture, but also could be used by other national regulatory regimes who permit use of GM food while also being committed to improving consumers' right to know.

INTRODUCTION

The issue of labeling genetically modified or genetically engineered food (GM food) has long been divisive in countries throughout the world. It is no different in China. China's demand for GM food juxtaposed against increasing consumer apprehension towards the food system in general[1] and towards GM food specifically render its

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1 *See* Rongduo Liu, Zuanna Pieniak & Wim Verbeke, *Consumers' Attitudes and Behaviour Towards Safe Food in China: A Review*, 33 FOOD CONTROL 93, 93–94 (2013) (attributes increasing concerns by

approach to GM food labeling particularly challenging. Given China's increasing leverage in the global food system, its emerging approach to this polarizing issue is an important gauge on how country regulatory regimes dispense information to consumers about GM food.[2]

China requires mandatory labeling of GM food. The rest of the story, however, is complicated. The labeling rules are unclear and enforcement is weak and inconsistent. This article attempts to explain the rationale for China's labeling law of GM food and recommends steps for improvement. In addition to dispensing practical recommendations for improving China's labeling laws of GM food, this article raises normative considerations, such as recognizing consumers' right to know, the providing of consumers with accurate and meaningful information, and giving consumers a real choice. It is hoped that this brief normative discussion prompts further analysis of how regulation of GM food can meet consumer interests. Finally, the search for balance in this article between providing consumers both GM food and accurate and meaningful information about GM food might benefit policy makers and commentators who seek the same goal.

In unraveling the complexities of GM food labeling in China, section two of this article describes the tension between the increasing usage of GM food in China and consumer concerns over the safety, environmental impact, and other risks associated with GM food. The same section describes China's current GM food labeling regime and lack of enforcement and compliance. Section three addresses the legal dimensions of the right to know in China and its place in the labeling regime. Section four compares China's labeling approach to GM food to the EU's mandatory labeling system and the US's voluntary labeling system both of which provide useful benchmarks for China to evaluate and improve its GM labeling regime. Section five identifies the main problems of GM food labeling in China and assesses the barriers to effective GM food labeling in China. Finally, section six recommends steps to addressing these challenges in order to improve China's GM food labeling regulations and satisfy the rights of consumers in China.

This article follows the Chinese legal definition of GM food as "food and food additives that are made from animals, plants and microorganisms whose genome structures have been modified through genetic engineering technology."[3] This definition roughly comports with the World Health Organization and common usage, which considers a GM food as a food whose genetic make-up has been altered through the insertion of a gene from a different organism.[4]Similarly, the United Nations defines

Chinese consumers over food safety to improved living conditions and the frequent occurrence of food safety scares).

[1] China's role in the recent food safety debate over the veterinary drug ractopamine hydrochloride points to the increasingly visible leadership by China in international food law debates that are both complex and polarizing. *See* Helena Bottemiller, *Codex Adopts Ractopamine Limits for Beef and Pork*, FOOD SAFETY NEWS, July 6, 2012.

[2] This definition was provided by the 2002 Management Measures on GM Food Hygiene Act, which was later repealed by the 2007 Management Measures on New Resources Food Act. Both of these Acts are described further in this article.

[3] WHO, FREQUENTLY ASKED QUESTIONS ON GENETICALLY MODIFIED FOODS, http://www.who.int/foodsafety/areas_work/food-technology/faq-genetically-modified-food/en/# (last visited Feb. 12, 2016).

GM food as "organism[s] that [have] been transformed by the insertion of one or more transgenes."[5]

I. STATUS OF GM FOOD IN CHINA

A. Production and Importation

GM crops are prevalent in the world: from 1996 to 2013, the planting area worldwide for GM crops increased over 100 times.[6] The top four GM crops planted in the world are soybeans, maize, cotton, and rapeseed, with soybeans being the most significant to China.[7] The planting area for GM soybeans alone increased from 79 million hectares in 2011 to more than 175 million hectares in 2013.[8] In the same year (2013), China ranked sixth in planting acreage of GM crops with 4.2 million hectares.[9] Although China has approved safety certification (known as "Agro- GMO safety certification") for seven kinds of GM crops—tomato, cotton, morning glory, hot pepper, pawpaw, rice and maize[10] —only cotton and pawpaw are approved for commercialization.[11] Thus, as of 2013, China's 4.2 million hectares production of GM food consisted entirely of cotton, except for 6 thousand hectares of GM pawpaw.[12]

China imports the most soybeans (GM soybeans and conventional soybeans) of any country in the world.[13] China began to import soybeans in 1995, and since then import volume of soybean has risen rapidly.[14] In fact, China first became a net importer of soybean in 1996.[15] In 2000, the total amount of imported soybeans exceeded ten million tons, making China the largest soybean importer.[16] Today, imported soybeans

[4] FAO Glossary Of Biotechnology For Food & Agriculture, Glossary Definition Of Genetically Modified Organisms, FOOD & AGRIC. ORG. OF THE UNITED NATIONS, http://www.fao.org/docrep/004/y2775e/y2775e08.htm#bm08 (last visited Feb. 12, 2016).

[5] INT'L SERVICE FOR THE ACQUISITION OF AGRI-BIOTECH APPLICATIONS , ISAAA BRIEF 46-2013: EXECUTIVE SUMMARY: GLOBAL STATUS OF COMMERCIALIZED BIOTECH/GM CROPS: 2013, http://www.isaaa.org /resources/publications/briefs/46/executivesummary/ (last visited Jan. 26, 2016) [hereinafter ISAAA Brief 46-2013].

[6] *GMO Planting*, GMO COMPASS, http://www.gmo-compass.org/eng/agri_biotechnology/ gmo_planting/ (last visited Jan.26, 2016).

[7] ISAAA BRIEF 46-2013, *supra* note 7.

[8] ISAAA BRIEF 46-2013, *supra* note 7.

[9] *China Currently Ratifies Certification for 7 Kinds of GM Plants* (我国共批准发放 7 种转基因植 物安全证书), SINA NEWS (Oct. 21, 2013), http://news.sina.com.cn/c/2013-10-21/150028491276.shtml.

[10] Jing Wen, *China Only Ratifies Commercialization of GM Cotton and Pawpaw (我国转基因种植仅批准种植棉 花木瓜)*, SINA NEWS (Mar. 7, 2013), http://gongyi.sina.com.cn/gyzx/2014-03-07/100748160.html.

[11] ISAAA BRIEF 46-2013, *supra* note 7.

[12] Shuyi Shang, Xiuhua Chen &Yu Li (尚书毅，程秀华，李瑜等), *GM Soybean's Possible Risk to China's Resource Environment and Food Safety (转基因大豆进口对我国资源环境和食品安全的可能风险)*, 22 FRIEND FARMER WEALTH, 20–22 (2010).

[13] *Id.*

[14] *Id.*

[15] Weiwei Wang (王微微), *Present Situation and Solution Analysis of Soybean Importation in China* (我国大豆产业进口贸易现状及对策分析), 10 PRAC. FOREIGN ECON. REL. & TRADE (Page on which article begins), 53–55 (2010).

made up over 80 percent of soybeans sold in China.[17] The majority of the imported soybeans are imported from the US, Argentina, and Brazil,[18] most of which is genetically modified.[19] Through manufacturing, food products containing soybean ingredients comprise a large part of people's daily fare. A 2009 investigation in Zhejiang Province showed that 57 percent of soybeans in local markets are genetically modified.[20] In 2011, after interviewing representatives of major supermarkets in Shenzhen City, researchers found that 70 percent of soybean cooking oil contained genetically modified ingredients.[21]

B. Consumer Concerns of Potential Risks of GM Food

The increase in GM food consumed by consumers in China has not alleviated consumer concerns about the risks of GM food.[22] Consumers frequently question the safety of GM food.[23] The most common perceived food safety concern for consumers over GM food is chronic health issues, especially the threat of food allergens being transferred through genetic engineering.[24] For instance, when the soybean was genetically modified by adding a gene from the Brazil nut – a known allergenic food – tests showed that the Brazil nut allergen appeared in the GM soybean.[25] Given the widespread use of GM soybeans in China, any increase in food allergens would not be

[16] China's trade imbalance for soybeans is in part price driven: in 2013, imported soybeans were 4100 yuan per ton, while domestic soybeans were 4500 yuan per ton. *See* Changluan Sun, *More Than 80 Percent of China's Soybeans are Imported* (进口转基因大豆国内份额超八成), BEIJING YOUTH DAILY NEWS (Aug. 4, 2013), http://scitech.people.com.cn/n/2013/0804/c1057-22436176.html.

[17] Wei Chen et al., *China's Soybean Imports-Price Impacts using a Production System Approach* 1 (forthcomimg Feb. 6–9, 2010), http://ageconsearch.umn.edu/bitstream/56528/2/2010-%20SAEA%20Paper%20%20%20China%E2%80%99s%20Soybean%20Imports.pdf (these three countries cultivate almost exclusively GM soybeans—the US (93%), Argentina (100%), and Brazil (92%)). *See also*, GENETICALLY MODIFIED PLANTS: GLOBAL CULTIVATION AREA – SOYBEAN (JUNE 10, 2014), GMO COMPASS http://www.gmo-compass.org/eng/agri_biotechnology/gmo_planting/342.genetically_modified_soybean_global_area_under_cultivation.html .

[18] Jing Wen, *supra* note 12.

[19] Hengjia Wang (王恒嘉), *GM Food are Universally Intruding Chinese Dinning Tables* (转基因食品普遍入侵国人餐桌), 10 PESTICIDE MARKET NEWS, 45 (2011).

[20] Peihua Zhang, Jinjie Zhang & Weijun Yang (张佩华，张进杰，杨卫军), *Investigation on GM Soybean, Maize and Tomato in Zhejiang Province* (浙江省转基因大豆、玉米和番茄的检测调查), 9 SCI. & TECH. FOOD INDUSTRY 312, 312–14, 318 (2009).

[21] Hepeng Jia, *Investigation Shows That More Than 50 Percent of People Thought GM Food are Unsafe* (调查称超5成人认为转基因食品不安全), SINA NEWS (Apr. 27, 2012), http://finance.sina.com.cn/chanjing/cyxw/20120427/171411945848.shtml; *see also* Chao Chen, Chengyu Shi, Jintao Zhan & Xinye Lv (陈超，石成玉，展进涛，吕新业), *Deviation Analysis of Declarative Preference and Purchase Behavior of GM Food: Taking Consumption of Cooking Oil by City Residents for Example* (转基因食品陈述性偏好与购买行为的偏差分析——以城市居民食用油消费为例), 6 AGRIC. ECON. ISSUE (page on which the article begins), 82–88 (2013).

[22] Hepeng Jia, *supra* note 23.

[23] Guangyin Wang, Shidong Han, Bihua Chen & Wenqing Jia (王广印，韩世栋，陈碧华，贾文庆), *Safety and Labeling Management of GM* Food (转基因食品的安全性与标识管理), 29 FOOD SCI. 667, 667–673 (2008); Camille Phillips, *Link or No Link? Controversy Simmers Over Allergies and Genetically Modified Food*, HARVEST PUB. MEDIA (Agu. 22, 2012), http://harvestpublicmedia.org/article/1390/link-or-no-link-controversy-simmers-over-allergies-and-genetically-modified-food/5.

[24] AMERICAN MEDICAL ASSOCIATION, Council On Science And Public Health, Csaph Report 2-A-12: Labeling Of Bioengineered Foods 4 (2012), http://factsaboutgmos.org/sites/default/files/AMA%20Report.pdf [hereinafter AMA, CSAPH REPORT].

negligible. Besides allergens, other perceived safety concerns of GM food, such as potential toxicity and antibiotic resistance, contribute to consumers' fear of consuming GM food.[26] Compounding the problem of consumer concerns in China is the practice by some companies, motivated by covering costs and making profits, to commercialize secretly GM crops without government permits.[27]

Environmental concerns in China over GM food include the fear that pesticide-resistant genes engineered into seed crops could outcross into surrounding sexually compatible plants.[28] This transfer of genetic material may confer the engineered trait, such as insecticidal properties, to wild relatives, giving them a competitive edge over other plants, resulting in untenable consequences, including the loss of China's rich soybean diversity.[29] Moreover, a view in China is that GM plants may harm non-target creatures. GM seeds containing pesticides may unintentionally kill beneficial insects (e.g., natural predators of insect pests), resulting in weakness in the food web.[30] Furthermore, over time pests are likely to develop resistance to the pesticide in GM plants, leading to higher difficulty in pest control.[31] In general, GM crops may cause gene pollution, reduce biological diversity and break ecological balance.[32]

China policy makers are presumably aware of a study on the impact of GM food on human health in June 2012 in which the American Medical Association concluded that in over twenty years of human consumption of GM foods, "no overt consequences on human health have been reported and/or substantiated," and that "there is no scientific justification for special labeling of genetically modified foods."[33] Notwithstanding this strong endorsement, it is notable that sixty-four countries, including China, while not banning GM food, do require the labeling of GM food, leaving consumers to decide for themselves.[34] Thus, although the government has repeatedly emphasized the safety of GM food sold domestically,[35] China has elected to require the labeling of GM food.

[25] Wang, Han, Chen & Jia, *supra* note 25.

[26] Greenpeace Investigation: Illegal Transaction of GM Rice For 10 Years (调查：转基因水稻非法流通 十年难禁), May 13, 2014, at 1, http://www.greenpeace.org/china/zh/publications/reports/food-agriculture/2014/illegal-rice-decade/.

[27] *See* Zhen Zhu (朱桢), *Pros and Cons Analysis of GM Crops' Impact on Ecological Environment* (转基因作物对生态环境的利弊分析), 1 CURRENT BIOTECH. 233 (2011).

[28] Charles W. Schmidt, *Natural Born Killers*, 106 Envtl. Health Persp. A432, A436 (1998).

[29] *See* Gaoming Jiang & Xiaofan Yu (蒋高明，虞晓凡), *Ecological Risks of GM Crops* (转基因作物的生态风险), 1 2 GREEN LEAF , 17 (2013)

[30] *See* Xu Su (苏旭), *Potential risk of genetically modified crops to ecological environment* (转基因作物对生态环境的潜在风险), 30 J. ENV'T & HEALTH 17 (2013).

[31] Jiang & Yu, *supra* note 31.

[32] AMA, CSAPH REPORT, *supra* note 26.

[33] *Labeling Around the World*, JUST LABEL IT!, http://justlabelit.org/right-to-know/labeling-around-the-world/ (last visited jan. 26, 2016).

[34] Xiaohua Ma, *Official of Ministry of Agriculture: GM Food with Safety Certification are Safe* (农业部官员：通过安全评价的转基因食品是安全的), YICAI (Oct. 17, 2014, 6:16 PM), http://news.163.com/14/1017/18/A8PF3N8G00014SEH.html; *see also* JOINT INTER-MINISTERIAL MEETING OFF. OF AGRICULTURAL GMO SAFETY MGET. & SCI. POPULARIZATION DEP'T OF CHINA SCI. & TECH. ASS'N (农业转基因生物安全管理部际联席会议办公室&中国科协科普部编), Treating GM Rationally (理性看待转基因) 14 (Popular Science Press 2014), http://www.moa.gov.cn/ztzl/zjyqwgz/kpxc/201406/P020140627538473476535.doc.

C. China's GM Food Labeling Laws

China's regulatory framework on GM food labeling is comprised of two parts: first, a set of Agro-GMO labeling regulations that are specific and unique to different stages of GM food production; and, second, general labeling requirements for all GM food. "Agro-GMO " refers to "GM animals, plants, microorganisms used in agricultural production or agricultural products procession and their products."[36] While it is clear that GM plants like soybeans and their directly processed products such as soybean oil fall within this definition, and that highly processed foods, especially the ones without GM ingredients, like chocolate containing lecithin extracted from soybeans are not Agro-GMOs, it is not so clear whether the foods falling in between these two categories are Agro-GMOs or not, such as soy sauce. The general labeling requirement provides simply in one short sentence that "[p]roduction and distribution of GM food must label prominently pursuant to law."[37] This straightforward mandate belies the confusion over what constitutes GM food under this regulation.

A review chronologically of the development of this two-part framework provides useful background in understanding its legal reach and limitations. Regulations on GM food labeling were provided in several administrative rules without clear legislative delegation until the Food Safety Law was revised in 2015. Such phenomenon was also common in other legal fields as Chinese government preferred to push forward regulation quickly rather than wait for time-consuming legislation process in the past years.

Regulation on Agro-GMO Safety Management (RAGSM)

In May 2001, China's State Council enacted its first regulation for Agro-GMO safety management: RAGSM. This regulation signaled the beginning of China's comprehensive regulation on Agro-GMO research, experiment, production, processing, business, and international trade. It stipulates a mandatory labeling requirement for all Agro-GMO product sales.[38] Specific provisions address parties who are responsible for GM labeling, the content of labeling, and penalties for violation.[39] The Ministry of Agriculture under the State Council is authorized to implement and enforce this regulation.[40]

Management Measures on Agro-GMO Labeling (MMAGL)

A few months later, in July 2001, the Ministry of Agriculture enacted MMAGL, an administrative rule intended to implement RAGSM.[41] This rule is China's most

[35] *See* Regulations on Agro-GMO Biosafety Management (promulgated by the State Council, May 23, 2001, effective May 23, 2001), ORDER NO. 304 ST. COUNCIL, Aart. 3, http://www.lawinfochina.com/display.aspx?lib=law&id=12849&CGid= (China). [hereinafter RAGSM].

[36] Food Safety Law (promulgated by the Standing Comm. of Nat'l People's Cong., Feb. 28, 2009, revised April 24, 2015, effective Oct. 1, 2015), http://www.npc.gov.cn/npc/cwhhy/12jcwh/2015-04/25/content_1934591.htm (China) [hereinafter 2015 FSL].

[37] RAGSM, *supra* note 37 at Art. 8.

[38] *Id.* at Arts. 28-29.

[39] *Id.* at Art. 4.

[40] Management Measures on Agro-GMO Labeling (promulgated by the Dep't of Agric., Jan. 5, 2002, effective Mar. 20, 2002), http://vip.chinalawinfo.com/newlaw2002/slc/slc.asp?db=chl&gid=38699 (China) [hereinafter MMAGL].

specific regulation focusing on Agro-GMO and its agriculture products and processed food. In specifying RAGSM's requirements, MMAGL separates Agro-GMO products into three separate categories, and stipulates different labeling requirements accordingly.[42] In addition, MMAGL requires that labeling must be prominent and must be designed and printed at the same time with the package.[43] It also annexes an enumerative catalog to list the first batch of Agro-GMOs subject to labeling management, including seventeen kinds of Agro-GMOs such as soybean, corn, rape, tomato and cotton.[44] In 2007, the Ministry of Agriculture issued its No. 869 Announcement, Labeling of Agro-GMO Tags (LAGT)[45] which further specifies location, content, size, and color of GM labeling, exclusively for the Agro-GMs listed in the catalog.[46]

Management Measures on GM Food Hygiene (MMGFH)

In July 2002, the Ministry of Health enacted MMGFH,[47] which was the first regulation focusing on GM food in general. MMGFH specifically stipulates requirements for GM food labeling, including the location of the labeling and special labeling for food with allergens.[48] MMGFH was the legal basis for supervision and management of GM food in China.

Management Measures on New Resources Food (MMNRF)

The Ministry of Health enacted the MMNRF in 2007 to regulate what are known as "New Resource Food," which includes food raw materials, such as those that lead "to changes of original ingredients or structure as a result of adoption of a new process in production."[49] MMNRF repealed the 2002 MMGFH, but did not assign the task to the Ministry of Health to regulate GM food. Instead, MMNRF expressly relegated that administration of GM food "to the relevant administrative regulations of the state."[50]

Management Regulation on Food Labeling (MRFL)

Also in 2007, the State Administration for Quality Supervision, Inspection and Quarantine (AQSIQ) enacted the MRFL[51] and then revised this regulation in 2009.

[41] *Id.* at Art. 6.

[42] *Id.* at Art. 7.

[43] *Id.* at Annex.

[44] Labeling of Agro-GMO Tags (promulgated by the Dep't of Agric., June 11, 2007, effective Aug. 1, 2007), http://vip.chinalawinfo.com/newlaw2002/slc/slc.asp?db=chl&gid=94352 (China)[hereinafter LAGT].

[45] *Id.* at Art. 1.

[46] Management Measures on GM Food Hygiene (promulgated by the Dep't of Health, Apr. 8, 2002, effective July 1, 2002), http://www.lawinfochina.com/display.aspx?lib=law&id=2300&CGid=[hereinafter MMGFH] (China).

[47] *Id.* at Art. 16.

[48] Management Measures on New Resources Food (promulgated by the Dep't of Health, July 2, 2007, effective Dec. 1, 2007), Art. 2, http://www.lawinfochina.com/display.aspx?lib=law&id=6210&CGid= (China) [hereinafter MMNRF].

[49] *Id.* at Art. 27.

[50] Management Regulation on Food Labeling (revised by the State Admin. for Quality Supervision, Inspection and Quarantine, Oct. 22, 2009, effective Sept. 1, 2008), http://www.lawinfochina.com/display.aspx?lib=law&id=13943&CGid= [hereinafterMRFL].

The revised MRFL regulates the labeling of all food, including GM food. For GM food, MRFL explicitly stipulates that GM information must be labeled on the tags in Chinese.[52] Though MRFL confirms mandatory labeling of GM food, the regulation does not define GM food or provide instructions on how to implement its general requirement.

Food Safety Law (2009 FSL)

In June 2009, FSL was enacted as China's highest-level food-safety law.[53] It provided general requirements for food labeling and confirmed its jurisdiction of GM food safety regulation, but had no provision specifically on GM food labeling.

Management Measures for the Safety Review of New Food Raw Materials (MMSRNM)

In October 2013, MMSRN repealed the MMNRF.[54] MMSRNM provides that "[t]he term 'new food raw materials' as mentioned in these Measures does not include genetically modified food, dietary supplements or food additives." MMSRNM further provides that "genetically modified food, dietary supplements or food additives shall be governed by relevant state laws and regulations."[55] To date, the Ministry of Health has not promulgated new administrative rules regulating GM food labeling, effectively negating any role for this agency to regulate GM food labeling.

Food Safety Law (2015 FSL)

In May 2015, China revised the 2009 FSL by explicitly providing that "production and distribution of GM food must label prominently pursuant to law" and stipulates correspondent administrative punishment for law-violation. The 2015 FSL unfortunately fails to address certain critical issues, such as what constitutes GM food and the labeling methods deemed to be "prominent."

In sum, the labeling of GM food in China is currently governed by the Ministry of Agriculture's Agro-GMO labeling requirements, which are based on definitional categories. The overarching regulatory responsibility for GM food labeling has transferred from the Ministry of Health to the AQSIQ. Yet, the AQSIS's MRFL's mandate that all GM food be labeled is vague and rarely enforced. Although the 2015 FSL provides a legislative basis for mandatory labeling of all GM food for the first time, it still lacks the detailed rules sufficient to command compliance and to be enforced.

D. Lack of Compliance and Enforcement: Trial Lawyers Engaged

The inconsistencies of GM food labeling and a lack of enforcement are attracting wide spread attention by many in China, including trial lawyers. Borrowing a chapter

[51] *Id.* at Art. 16.

[52] Food Safety Law (promulgated by the Standing Comm. People's Cong., Feb. 28, 2009, effective June 1, 2009), http://www.lawinfochina.com/display.aspx?lib=law&id=7344&CGid= (China) [hereinafter 2009 FSL].

[53] Administrative Measures for the Safety Review of New Food Raw Materials (promulgated by the Dep't of Health, May 31, 2013, effective Oct. 1, 2013), http://www.lawinfochina.com/display.aspx?lib=law&id=15358&CGid= (China) [hereinafter MMSRNM].

[54] *Id.* at Art. 23.

out of the U.S. playbook on using class action lawsuits to fill regulatory gaps in the labeling of GM food, in September 2014, seventy-one lawyers in China representing consumers filed lawsuits against soybean oil producers in China for GM food labeling violations.[56] The plaintiffs argued that technical compliance with labeling requirements did not automatically satisfy the requirement of "prominence" stipulated in the Agro-GM regulations.[57] For example, plaintiffs asserted that even though labeling conformed to the LAGT placement and size requirements – the labeling in question was located close to the ingredient list and the character height was not less than 1.8mm[58] – it still violated the general standard of "prominent" for large soybean oil packages.[59]

Plaintiffs also asserted that the required prominence of GM food labels was to be evaluated in relation to non-GM labels. For example, in October 2014, plaintiffs alleged in one of the early lawsuits in Fuzhou City that the producer failed to meet the "prominence" test when the GM label was significantly smaller and less prominent that the "Non-GM" label used by the same producer.[60] Plaintiffs also asserted that the distributor should also bear liability because it sold the soybean oil knowing of these deficiencies.[61] The plaintiff requested the court to order that the GM soybean oil be relabeled to conform to the "prominence" standard.[62] The producer responded that its labels were prominent enough by complying with minimal requirements and supported its argument by providing the certification issued by a local regulatory department.[63] The distributor asserted that it had no legal responsibility to check the GM labels.[64] To date, the court has not yet made a decision.[65] In addition to this case there are eight other similar cases pending in other courts.[66]

The extensive litigation brought forth by the seventy-one lawyers in China underscores the unsatisfactory status of GM food labeling in China. First, the current

[55] Xinhong Nian, *71 Lawyers are Fighting Against Cooking Oil Company For Inconspicuous GM Labels and 5 Cases Have Been Accepted in Kunming* (转基因标识不显著 71 律师死磕食用油 昆明已有 5 件立案), YUNNAN (Sept. 11, 2014), http://society.yunnan.cn/html/2014-09/11/content_3362177.htm.

[56] *Id.*

[57] LAGT, *supra* note 46 at § 3.4.1.

[58] Nian, *supra* note 57.

[59] Chao Lu, *Jinlongyu GM Label Case was Heard in Fuzhou*（"金龙鱼转基因标识案"福州开), XINHUANET NEWS (Oct. 31, 2014), http://news.xinhuanet.com/food/2014-10/31/c_127164708.htm.

[60] *Id.*

[61] *Id.*

[62] *Id.*

[63] *Id.*

[64] This line of argument by plaintiffs and defendants is analogous in some respects to the arguments made in a Lanham Act case decided by the U.S. Supreme Court in Pom Wonderful LLC v. Coca-Cola Co., 134 S. Ct. 2228 (2014). Pom Wonderful, a company that manufactures pomegranate juice, filed a lawsuit against Coca-Cola, alleging that pomegranate juice, produced under its Minute Maid brand, misled consumer because it actually consisted almost entirely of apple juice and grape juice. Because Coca-Cola's labeling complied with FDA regulations at issue and because FDA did not act against Coca-Cola, the lower courts found that judicial enforcement on a labeling issue would undercut FDA's expert judgments and authority. Pom Wonderful LLC v. Coca-Cola Co., 679 F.3d 1170, 1177 (9th Cir. 2012). The Supreme Court in a unanimous decision reversed the Ninth Circuit and held that notwithstanding technical compliance with FDA rules, competitors may bring Lanham Act claims alleging unfair competition from false or misleading product descriptions on food labels regulated by FDCA.

[65] Lu, *supra* note 61.

labeling regime is not specifically designed effectively to convey information to consumers. Second, the penalties provided for labeling infractions under the regulations appear inadequate. As a response to this problem, Shenzhen City raised the maximum fine for non-compliance of GM food labeling to 100 thousand RMB,[67] double the fine as provided in RAGSM and MMAGL.[68] Third, the Agro- GMs list cataloged in MMAGL is outdated and does not cover the increasing and diverse GM foods on supermarket shelves. Finally, compliance and enforcement is uneven and inconsistent. Not all GM foods are labeled, and even for those that are labeled, there is remarkable inconsistency between the labeling of different brands, often leading to confusion among consumers. These problems are discussed in more detail in section five of this article.

In light of these challenges, some scholars in China have suggested strengthening the FSL provisions on GM food and ensuring that the Ministry of Health enacts labeling standards on GM food as soon as possible.[69] Some of these efforts have already begun: FSL is currently being modified and the State Council has announced a plan to strength the regulation of GM food labeling.[70]

II. "RIGHTS" RATIONALE FOR CHINA GM FOOD LABELING LAWS

Underlying the problems of GM food labeling is the palatable tension in China between the increasing consumption of GM food and the increasing concern of GM food's potential risks for human health, environmental diversity, and environmental safety.[71] This tension gives rise to a debate over what and how to convey information to consumers on the label of a GM food product about the fact that it is genetically modified or contains GM ingredients. The crux of this debate is to what extent should consumers be allowed to make a fundamental, informed choice of whether or not to purchase the GM food product. The answer to this question factors in a legal and normative perspective unique to China and is not easily resolved.

What is clear is that consumers by large margins in China want to know whether food is genetically engineered. Reputable polling shows that roughly 84 percent of Chinese consumers believe that GM food labeling is necessary to distinguish GM food from other food; only 4 percent believe that GM food labeling is unnecessary.[72]

66 Chenghui Sun & Jiangping Fu, *Shenzhen is Considering Strengthening GM Labeling by Legislation* (深圳拟立法推动"转基因"标识制度), XINHUANET NEWS, (Aug. 27, 2014), http://news.xinhuanet.com/2014-08/27/c_1112247027.htm; *see also* Article 52 of Draft of Shenzhen Regulation on Ecological Civilization Development (深圳经济特区生态文明建设条例（草案）), http://www.szns.gov.cn/publish/main/1/19/tzgg/20140813103727980927963/1407897548172.doc.

67 MMAGL, *supra* note 42 at Art. 14; RAGSM, *supra* note 37 at Art 52.

68 Xiaopeng Liu, *Too Shy to Show or Cannot Show: Investigation on GM Food Labeling* (羞于见人还是不能见人?—转基因食品标识情况调查), XINHUANET NEWS (Nov. 4, 2013), http://news.xinhuanet.com/fortune/2013-11/04/c_118001540.htm.

69 *See* General Office of the State Council (国务院办公厅), *2014 Food Safety Priority Plan* (2014年食品安全重点工作安排), May 2014, http://news.xinhuanet.com/politics/2014-05/27/c_1110875936.htm.

70 *See Eat or Not Eat: Debate on GM* (吃，还是不吃，激辩转基因) CHINA ECONOMY REPORT, No.1 (2014).

71 Jian Huang, Zhenhong Qi, Liangyi Feng & Dongmin Zhang (黄建，齐振宏，冯良宜，张董敏), *Research on Labeling Management Institution's Effect on Consumers' Willingness to Buy GM Food:*

A. *Labeling: Right to Know*

Though the Chinese government has expressed confidence in its supervision and management of GM food,[73] it has built up a mandatory GM food labeling system in order to strike a balance between the promises of developing GM food[74] and consumers' interests.[75] Providing consumers with the choice to avoid GM food may influence to some extent the development of GM technology; nevertheless, the prevailing view in China is that the right of making such decisions should still be left to consumers themselves. As stated in the MMAGL, China's Agro-GM labeling "aims at strengthening management of Agro-GMO labeling, regulating production, sales and consumption of Agro-GMOs, and protecting consumers' right[s] to know."[76] In the latest regulatory document on Agro-GMO safety, which was published in June of 2014, the Ministry of Agriculture reiterated consumers' right to know right to know: "strengthen supervision and management of GM food labeling, ensure all the covered GM foods are labeled in the right way, fully protect consumers' rights to know and rights to choose."[77]

B. *Right to Know and Rational Decision Making*

Due to its scientific complexity and uncertain risks, GM food presents the problem of asymmetrical information.[78] On the one hand, consumers do not readily understand GM technology.[79] Nor can consumers distinguish GM food from non-GM food by physical appearance alone.[80] Consumers can only acquire relevant information of GM food by relying on the producers.[81] On the other hand, motivated by maximizing profits, it is natural for producers of GM food and non-GM food to obfuscate safety risks and exaggerate the qualities of their respective products.[82] As a result, the gap of information between consumers and producers is significant, precluding rational

Taking Wuhan City for Example (标识管理制度对消费者转基因食品购买意愿的影响研究——以武汉市为例), 18 J. AGRIC. U. CHINA, 220–225 (2013).

[72] Dep't of China Sci. & Tech. Ass'n, *supra* note 36, at 15.

[73] The touted potential upside to food biotechnology is that GM food may help ameliorate some of the greatest crises currently facing the world, including hunger and malnutrition environmental degradation, and widespread disease. Not all of these remarkable promises, however, withstand scrutiny. For example, even proponents of GM foods admit that increasing farm productivity and alleviating hunger is generally recognized as an oft-cited myth of the benefits of GE food. *See* Gregg Jaffee, *What You Need to Know About Genetically Engineered Food*, THE ATLANTIC (Feb. 7, 2013), http://www.theatlantic.com/health/archive/2013/02/what-you-need-to-know-about-genetically-engineered-food/272931/.

[74] DEP'T OF CHINA SCI. & TECH. ASS'N, *supra* note 36, at 17.

[75] MMAGL, *supra* note 42 at Art. 1.

[76] MINISTRY OF AGRIC., FURTHER STRENGTHEN SUPERVISION AND MANAGEMENT OF AGRO-GMO SAFETY (农业部关于进一步加强农业转基因生物安全监管工作的通知), June 10, 2014, http://www.moa.gov.cn/govpublic/KJJYS/201406/t20140610_3934437.htm.

[77] Yuhong Wang (王宇红), *Improving Protection of Consumers' Rights to Know GM Food* (论转基因食品消费者知情权保障制度的完善), 30 J. S.W. INDUS. U. (SOCIAL SCIENCE VERSION) 9 (2010).

[78] Dai Zhongxi (戴忠喜), *Research on GM Food Labeling and Protecting Consumers' Rights to Know* (转基因食品标识与消费者知情权保护研究), 1 CHINA INDUS. & COM. RES., 40, 40–43 (2004).

[79] *Id.*

[80] Yaodong Wang (王耀东), *The Legitimacy of Consumers' Right to Know About Genetically Modified Foods* (转基因食品知情权的正当性), 5 TECH. & INNOVATION MGMT., 684, 684-87 (2009).

[81] Wang, *supra* note 79.

decision by consumers on whether to purchase GM food. A valuable aim of GM food labeling would be to mitigate the gap of information between consumers and producers and ensure rational decision-making.

C. Right to Safety Connected to Right to Know

In rounding out the right to know, it is helpful to note that Chinese scholars hold that the right of safety is also an important component of a consumers' rights system.[83] It then follows that in China consumers have a right to information concerning food safety. When safety risks of GM food cannot be evaluated reliably because of scientific uncertainties, consumers should be provided information to help them make informed choices.[84] Providing nuance to this theme, a distinguished U.S. scholar has noted that even if purported risks of GM food is proved non- existent in the future, disclosure of pertinent information is still meaningful because such risks have caused fear among the public,[85] and fear itself is enough to influence consumers' choices and result in correspondent change in their behavior.[86] Thus, by becoming aware of present scientific debates and risk assessments around GM technology, consumers can be encouraged to make rational choices based on their own risk judgment and preference, leading to less blind aversion to uncertain risks.[87]

III. COMPARISON OF GM FOOD LABELING LAWS IN CHINA TO THE U.S. AND E.U.: LESSONS LEARNED

A. Overarching Comparison: Precautionary Principle, Threshold, and Traceability

Comparing GM food labeling laws in China with the U.S. and E.U. provides useful benchmarks both to evaluate and assess China's GM labeling approach.

Precautionary Principle

China regulates GM technology more like the E.U.'s precautionary approach[88] than the United States' substantial equivalence approach.[89] The implementation of the precautionary principle in China's regulatory regime is through its system of permits. The government issues permits at three different junctures of GM food development: first, prior to the testing of any Agro-GMO, testers need to get permits for testing in the fields;[90] second, prior to the actual production of GM food, producers need to be

[82] *Id.*

[83] *Id.*

[84] *See* CASS R. SUNSTEIN, LAWS OF FEAR: BEYOND THE PRECAUTIONARY PRINCIPLE 21–22 (2005).

[85] *See Id.*

[86] Wang, *supra* note 79.

[87] *See* Zhu Xiao & Guo Xiaomin, *General and Particular Applying Elements of the Precautionary Principle in International Trade*, 10 FRONTIERS OF LAW IN CHINA 245, 255 (2015).

[88] *See Genetically Engineered Foods, Testimony before the S. Comm. on Basic Research, H. Comm. on Science* (Aug. 6, 1999) (statement of James H. Maryanski, Ph.D., of the Food and Drug Administration), http://www.fda.gov/newsevents/testimony/ucm115032.htm.

[89] RAGSM, *supra* note 37 at Ch. 2.

permitted for manufacture;[91] and third, before the Agro-GMOs enter into the market, companies need to acquire permits for commercialization.[92]

Threshold and Categories

Compared to the E.U. system, China's GM food labeling is even stricter if relevant regulations are interpreted literally. While the E.U. system sets a threshold for GM labeling at 0.9 percent, there is no threshold or exemption in Chinese system.[93] The Agro-GMO labeling regime is divided into three categories: Agro-GMOs like soybean, directly processed Agro-GMO products like soybean oil, and processed Agro-GMO products containing no GM ingredients such as chocolate containing lecithin extracted from GM soybeans.[94] However, the enumerative catalog of regulated Agro-GMOs annexed with MMAGL only covers a portion of Agro-GMOs and their directly processed products, but no processed Agro-GMO products containing no GM ingredients.[95] Though the labeling requirements for these three categories are distinctive, in general they are not as specific as under the E.U. regulations because they only require "prominence" generally.[96]

Traceability

China and the E.U. both require the industry to identify GM ingredients throughout the supply chain. Regulation 1830/2003 of the E.U. requires traceability for all GM food and animal feed as long as it is derived from a GM plant, even if there is no GM material in the final product.[97] MMAGL explicitly stipulates labeling requirement for "GM products that are produced with Agro-GMO or produced with products containing GM ingredients, but there is no GM ingredients in the final products or cannot be detected."[98] Logically, it is only possible if GM ingredients are identified and traced throughout the supply chain. However, unlike the E.U. system, there is no formal system of traceability in China. This scenario makes enforcement of the Agro-GMO requirements very difficult.[99]

The U.S. Food Safety Modernization Act provides a modest traceability mandate on the food industry, mostly focusing on high-risk foods, which by definition does not include GM foods.[100] It is interesting to note that non-GM certification in the United States requires a verification process that relies on rigorous traceability, documentation, and segregation practices for products. If U.S. enterprises want to satisfy consumer preference for GM-free products, they must adopt complex identity

[90] *Id.* at Ch. 3

[91] *Id.* at Ch. 4.

[92] DEP'T OF CHINA SCI. & TECH. ASS'N, *supra* note 36, at 18–19.

[93] *Id.* at 17–18 (Only Agro-GMO products included in the list are subject to mandatory labeling; other Agro-GMO products can be voluntarily labeled by producers).

[94] MMAGL, *supra* note 42 at Art. 6.

[95] *Id.* at Art. 7.

[96] Regulation (EC) 1830/2003.

[97] MMAGL, *supra* note 42 at Art. 6.

[98] *Consumers' Rights to Know Should be Ensured by Traceability* (消费者对转基因知情权需要追溯来保障), GUANGDONGFOOD NEWS (May 29, 2009), http://www.guangdongfood.net/news/show.php?itemid=11448&page.

[100] Food Safety Modernization Act of 2011 § 204(a)–(b), 21 U.S.C. § 2223 (2012).

preservation practices to keep GM crops separate from conventional varieties as they progress from seed to field to finished food. There is no comparable voluntary or private traceability regime in China for the certification of non-GM food.

B. Informed Choice

Arguably, neither the United States nor the E.U. labeling regimes empowers consumers to make informed choices about GM food:[101] "in the United States consumers have a choice between GMO and non-GM but no information, while in Europe consumers are guaranteed information but with no choice, since only non-GM products can be found on the shelf."[102] According to a report released by the E.U. in 2011 evaluating its legislative framework in the field of GM food and feed, "the main external factor limiting the choice of the European consumers with respect to their purchases of GM food is their availability in stores."[103] According to food chain operators, labeling legislation removed consumer choice and does not facilitate an informed consumer decision.[104] Interestingly enough, in a similar view, though most U.S. companies only adopt "GM- free" labeling under the voluntary GM food labeling system, consumer litigation and advocacy has resulted in restaurants or retailers adopting certain mandatory requirements.[105] For example, in March 2013, Whole Foods Markets announced that by 2018, all of its suppliers would be required to either certify that their products did not contain genetically modified organisms or label products that do contain GM ingredients.[106] Also, as of March 2014, twenty-one states had considered legislation or ballot initiatives that would require producers and manufactures to label GM products.[107] Among all of the state initiatives, three of them passed. Vermont's GM law[108] has been formally enacted, while Connecticut's and Maine's laws have not been triggered into action.[109] All three laws have the stated

[101]Valery Federici, *Genetically Modified Food and Informed Consumer Choice: Comparing U.S. and E.U. Labeling Laws*, 35 BROOK. J. INT'L L. 515, 533 (2010).

[102]ROBERT PAARLBERG, STARVED FOR SCIENCE: HOW BIOTECHNOLOGY IS BEING KEPT OUT OF AFRICA 23 (Harvard Univ. Press 2009).

[103]Food Chain Evaluation Consortium, Evaluation of the EU Legislative Framework in the Field of GM Food and Feed (2012), http://ec.europa.eu/food/food/biotechnology/evaluation/docs/evaluation_gm_report_en.pdf; GMOs: EU's Legislation on the Right Track, Evaluation Reports Conclude, http://europa.eu/rapid/press-release_IP-11-1285_en.htm.

[104]*Id.* at 101.

[105]Brandon W. Neuschafer, Recent Developments In Food And Drug Law, 2014 Ed.: Leading Lawyers On Dealing With Increased Enforcement, Keeping Up-To-Date With Fda Requirements, And Developing Compliance Practices, 2 2013 *WL* 5760772 (2013).

[106]*See* Walter Robb & A.C. Gallo, *GMO Labeling Coming to Whole Foods Market*, WHOLE FOODS BLOG (Mar. 8, 2013), http://www.wholefoodsmarket.com/blog/gmo-labeling-coming-whole-foods-market.

[107]*Id.* at 6.

[108]An Act relating to the labeling of food produced with genetic engineering, No. 120,§ 3034, 2014 Vermont Acts, May 8, 2014, http://www.leg.state.vt.us/docs/2014/Bills/H-0112/ACT0120%20As%20Enacted.pdf ([hereinafter Vermont GM Law].

[109]Tiffany B. Wong, *Playing Politics with Food: Comparing Labeling Regulations of Genetically Engineered Foods Across the North Atlantic in the United States and European Union*, 23 SAN JOAQUIN AGRIC. L. REV. 243, 245 (2013).

purpose of providing consumers with information to make informed decisions in the marketplace.[110]

When compared to the US and the EU approaches to GM food labeling, China's unique approach to GM food raises interesting questions about choice. While there is no doubt that a mandatory GM food labeling system, such as that in the EU, can protect consumers' rights to know, it is hard to say that mandatory labeling necessarily leads to a better guarantee of consumers' rights to choose in a meaningful way. Also, China's mandatory labeling approach deals with the tension not evident in the EU system – a stronger national stronger national interest than the EU in developing GM technology to protect its national security in food supply.[111] As stated in RAGSM, China's Agro-GM policy "pursues the objective of strengthening management of Agro-GMO safety, protects human health, safety of flora, fauna and microorganisms, the environment while promoting the development and research of Agro- GMO technology."[112] Thus, China tries to balance interests of consumers, protection of environment, and needs of developing GM technology.[113] Much of China's approach is pragmatic: for example, in face of water shortages, China is in urgent need of developing drought-assistant GMs.[114]

IV. CHALLENGES FOR RATIONAL GM FOOD LABELING IN CHINA

A. Primary Problems Confronting GM Food Labeling

Most GM Foods are not Labeled

According to the Agro-GMO catalog, GM foods that should be labeled include soybeans, soybean powder, soybean oil, soybean meal, corn, corn oil, corn powder, rapeseed, rapeseed oil, rapeseed meal, tomato, and ketchup. In practice, these foods are not consistently labeled. An investigation in 2003 by the agricultural administrative department of Liaoning Province revealed that less than half of GM soybeans, soybean oil, and blend oil were labeled as such; many of the same products were either not labeled or not labeled clearly.[115] An investigation in Guangzhou City by the Guangdong Center for Disease Control and Prevention documented that 26.7 percent of sampled soybeans, potatoes, and their products sold in supermarkets between May 2006 and June 2007 were produced with GM ingredients, but none were labeled.[116] These investigations substantiate the common belief in China that the rate of

[110] *Id.* at 262; *see also* Vermont GM Law, *supra* note 109, at § 3041(1).

[111] DEP'T OF CHINA SCI. & TECH. ASS'N, *supra* note 36, at 7–8.

[112] Xiaohua Ma, *supra* note 37, at Art. 1.

[113] *Id.*

[114] Shuwen Qi, *GM Food: Hope or Fear for the Chinese?*, PEOPLE'S DAILY ONLINE (Oct. 16, 2010), http://english.people.com.cn/90001/90778/90860/7168050.html.

[115] Jun Lu (卢俊), *Problem of GM Food Labeling Management and Solutions* (转基因食品标识管理 存在的问题及对策), 2 SEED WORLD 7, 7 (2004).

[116] Wenli Li, Junming Huang & Xingfen Yang (李文立，黄俊明，杨杏芬等), *Initial Investigation and Research on Labeling of GM Food Sold in Guangzhou City* (广州市售转基因食品标识状况的初步调查研究), 10 CONFERENCE PROCEEDINGS OF FOURTH TOXICOLOGY ACADEMIC CONFERENCE (第四届第二次中国毒理学会食品毒理学专业委员会与营养食品所毒理室联合召开学术会议论文集) 174–179 (2008).

compliance with GM food labeling requirements in China is relatively low, meaning that GM foods without labeling are prevalent in the market and sold indistinguishably with non-GM foods on supermarket shelves.

Downstream Products are Rarely Labeled

The only Agro-GMO product that is consistently labeled is GM soybean oil; other kinds of downstream products are rarely labeled. In 2005, an investigation on the status of GM food labeling sold in the Guiyang food market found that, while 100 percent of GM plant oil sold in the 4 major supermarkets was labeled, other GM foods such as soy sauce, soybean milk powder, ketchup, corn powder, corn porridge, and corn soup, were all sold without GM food labeling.[117] In 2008, an investigation by the Ningbo Health Supervision Institute of supermarkets of 184 different kinds of food uncovered that none of the downstream products produced with cataloged Agro-GMOs were labeled. Although soybean oil was labeled as GM, none of the downstream derivative food products, such as soybean powder, soybean milk, tofu, or soy sauce, were labeled as GM.[118] Likewise, around the same time, an investigation carried out in Tianjin, showed zero percent of downstream products such as soybean powder, corn power, or ketchup was labeled.[119] In 2013, after investigating supermarkets in Beijing and Tianjin, researchers found that products containing GM substances, including tofu, soy sauce, thick broad bean sauce, ketchup, and maize were not labeled as GM.[120]

Content of GM Food Labeling is not Consistent

As noted previously, according to MMAGL, Agro-GMOs are divided into three categories and each category is required to be labeled in the way specifically stipulated by the regulation.[121] GM food labeling in practice does not conform to these requirements. The investigation in Tianjin revealed that GM foods sold in fourteen large-scale supermarkets were labeled in eight different ways.[122] The Ningbo investigation showed that mandatory GM food labeling was expressed differently from the labeling requirements stipulated in MMAGL, including pronouncements such as "GM food," "ingredients contain GM materials", and "produced with GM food."[123] Voluntary GM food labeling was even more diverse, including statements such as "no GM ingredient," "produced with domestic soybean," and "non-GM ingredients."

[117] Yafang Wang, Xiaohong Sun & Mi Zhang (王娅芳，孙晓红，张密), *Investigation on the Status of GM Food Labeling in Guiyang and Citizens' Awareness of GM Food* (贵阳部分转基因食品标识及市民对转基因食品认知度调查), 6 J. GUIYANG MED. SCHOOL 531, 532 (2004).

[118] Yong Wang, Yi Chen & Qingkuo Lan (王永，程奕，兰青阔等), *Investigation on the Status of GM Food Labeling in Tianjin* (天津市转基因食品标识现状调查), 14 TIANJIN Agric. Sci. 8, 8-9 (2008).

[119] Jianke Li & Yongping Zhu (**李建科，朱永平**), *Investigation on the Status of GM Food Labeling* (**市售**转基因食品标识标签调查), 4 ZHEJIANG PREVENTIVE MEDICINE 39, 39-40 (2008).

[120] Ailing Liao (**廖**爱玲), *Investigation Showed that GM Food Labeling were Messy and Some GM Foods Were Not Clearly Labeled* (调查指转基因食品标识混乱**部分**转基因食品未明确标识), PEOPLE NEWS (Nov. 5, 2013), http://shipin.people.com.cn/n/2013/1105/c85914-23430157.html.

[121] MMAGL, *supra* note 42, at Art. 6.

[122] Wang, *supra* note 119, at 8–10.

[123] Li, *supra* note 120, at 39–40.

Actual GM Food Labels are not Prominent Enough

As previously noted, it has been asserted that GM food labels in conformance with the specific requirements may still not meet the general requirement that the GM label must be prominent enough for consumers to see. Instead of appearing on the front of the package, labels are often located on the side of the package where they are less likely to be seen.[124] In addition, also as previously noted, the label characters are too small to be noticed by consumers.[125] This style of characters contrasts sharply with the labeling for cooking oil that is GM-free, which is typically featured prominently in the middle of the package.[126] Finally, the color of some GM food labeling is nearly identical to the product's background color, rendering it difficult to distinguish.[127]

Inadequate Labeling of GM Food Varieties

According to RAGSM, the labels of Agro-GM foods listed in the catalog of Agro-GMOs annexed with MMAGL must conform to the labeling requirements in MMAGL.[128] RAGSM does not expressly limit the responsibility to label GM food products only to those products listed in the catalog. It also should be noted that MMAGL explicitly stipulates the labeling method of GM products produced from Agro-GMO but without Agro-GMO residue;[129] however, the actual labeling of GM products is limited to GM products listed in the catalog.[130] The catalog has not been updated since its publication date in 2002. The catalog's name of "first batch of Agro-GMOs that are subject to labeling" implies additional batches of product subject to the rules, but to date no second batch has been published. The growing diversity of GM food in China demonstrates the need for the publication of a second batch and a general update of the catalog; as it stands now, the catalog is seriously outdated.

As noted in the beginning of this article, while only pawpaw may be grown commercially in China, [131] agro-safety certification has been extended to numerous other products, including hot pepper and rice.[132] None of these certified GM products have been added to the Agro-GMO catalog. Additionally, food varieties have been considerably diversified in the past twelve years. Even products produced with cataloged Agro-GMOs have multiplied. For instance, as discussed in section 2, most soybeans now sold and used in China are genetically modified. This situation is completely different from twelve years ago, when non-GM soybeans domestically produced were the majority in the market. Soybeans are used to produce a wide variety of foods, including soybean oil, soybean powder, soybean milk, and other food

[124]Chen Zhang, *GM Food are Playing the Game of "Guess Who am I?"* (转基因食品大玩猜猜我是谁), GUANGZHOU DAILY NEWS (April 10, 2014), http://gzdaily.dayoo.com/html/2014-04/10/content_2592331.htm.

[125]Nian, *supra* note 57; Liao, *supra* note 119.

[126]Zhang, *supra* note 125.

[127]*Gansu Province Promulgates New Rule to Control GM Labeling* (甘肃首出新规 严控转基因标识) , MCSHE NEWS (May 24, 2014), http://www.mcshe.com/fzt/27313.html.

[128]RAGSM, *supra* note 37, at Art. 28.

[129]MMAGL, *supra* note 42, at Art. 6.

[130]DEP'T OF CHINA SCI. & TECH. ASS'N, *supra* note 36, at 17–18.

[131]Wen, *supra* note 12.

[132]SINA NEWS, *supra* note 11.

ingredients and additives. Lecithin extracted from soybeans, for example, is used as an emulsifier in chocolate, ice cream, margarine, and baked goods. In light of these facts, the catalog is far from sufficient to cover all the GM foods that play important roles in consumers' daily life.

Abuse of the Non-GM Label

The disarray in the regulation of GM food labeling in China results in an information gap for consumers, leaving consumers wanting to choose non- GM food with two choices. First, consumers can purchase organic food with independent certification, which is usually much more expensive than other food.[133] The other choice is choosing food with opposite labeling, for instance, food labeled as "non-GM food." However, non-GM labeling is often incorrect. In 2007, an investigation covering labeling of 114 kinds of GM food in Tianjin uncovered twenty-four products labeled GM and nine products labeled as non-GM, which were not standardized or certified by a third-party.[134] Some merchants use oversized characters and extremely prominent color to attract consumers.[135] These unchecked uses of the non-GM label further weaken the already convoluted state of GM labeling.

B. Barriers to Effective GM Food Labeling

Consumer Attitudes Towards GM Food

Consumer research in China demonstrates how difficult it is for a label to inform accurately consumers. Research in Wuhan[136] shows that only 3.5 percent of consumers preferred to buy GM food, while 59 percent of consumers preferred to buy non-GMO food.[137] According to another report,[138] when consumers were asked "Do you know about GM food?," 63.9 percent said they did not know anything or knew a little, while 36.1 percent said they knew GM food well or knew a lot about it.[139] When asked "Why do you not want to buy GM food?" 53.7 percent said that they did know about GM food and were worried about its effect on their health; 40.6 % said that there was lots of negative information on GM food, and they did not want to take risks. These two reasons were the main disincentives for consumers to buy GM food.[140] This study implies that if consumers have inadequate knowledge and misunderstandings of GM food, GM food labeling may not contribute to informed choice making. It is interesting to note that in the same report, when asked, "Why do you buy GM food?," consumers listed as the three most important factors cited "more nutrition" (48.1 percent), "less

[133]Chao He, *Organic Food Increase by 30 Percent to 50 Percent Every Year* (中国有机食品消费年增长三至五成常年缺口 30%), HUANQIU NEWS (Jan. 23, 2014), http://finance.huanqiu.com/Consumer/2014-01/4782581.html.

[134]Wang, *supra* note 118, at 531, 533.

[135]Zhang, *supra* note 125.

[136]Huang, *supra* note 73, at 220–225.

[137]*Id.*

[138]Chen, *supra* note 23.

[139]*Id.*

[140]*Id.*

residue of pesticide," (40.9 percent), and "better taste" (36 percent).[141] In addition, 68.1 percent of consumers believed that nutritional content influenced them most when determining which brand of cooking oil to purchase.[142]

The Effect of Price on GM Food Purchases

Compliance and enforcement of GM food labeling brings considerable cost.[143] It requires segregating GM and non-GM food throughout the production process.[144] This practice generates difficulties with certain fungible products, like soybean or corn, where it may be costly to segregate GM crops and byproducts.[145] Such segregation could have impacted economies of scale: the end result could be higher food prices, for both GM and non-GM food.[146] In addition, GM food labeling also demands government budgets for implementing and enforcing the law, e.g., supervising compliance and providing instruction and training.

According to two reports from Greenpeace in China, Chinese consumers' purchasing decisions in response to price differ by income level.[147] Wuhan and Changsha (CWC) are two medium-sized cities in China with moderate-income levels, while Beijing, Shanghai, and Guangzhou (CBSG) are the biggest cities with the highest income levels in China. When the non-GM food and GM food have the same price, 50 percent of the consumers in CWC and 61 percent of the consumers in CBSG prefer to buy non-GM food.[148] When the non-GM food is 30 percent more expensive than GM food, 33 percent (down from 50 percent) of the CWC and 51 percent (down from 61 percent) of the CBSG continue to choose non-GM food.[149] While both populations showed price point sensitivity, the change was slightly greater in moderate-income cities than in high-income cities.

Lack of Trust Toward Third Parties

Due to the unique legal and cultural environment in China, reliance on third parties to ensure compliance of GM labeling requirements is problematic. According to an

[141] *Id.*

[142] *Id.*

[143] J. Howard Beales III, *Modification and Consumer Information: Modern Biotechnology and the Regulation of Information*, 55 FOOD & DRUG L.J. 105, 115.

[144] *Id.*

[145] *Id.*

[146] Arthur E. Appleton, *The Labeling of GMO Products Pursuant to International Trade Rules*, 8 N.Y.U. ENVTL. L.J. 566, 570.

[147] GREENPEACE & TSINGHUA UNIV. MEDIA SURVEY LAB. (绿色和平与清华媒介调查实验室), CONSUMER SURVEY REPORT ON GMOS AND GM FOOD IN BEIJING, SHANGHAI, AND GUANGZHOU (北京，上海与广州转基因作物及食品消费者调研报告) (2010), http://www.greenpeace.org/china/Global/china/publications/campaigns/food-agriculture/2011/ge-research-bsg-2011.pdf [hereinafter CBSG];GREENPEACE & TSINGHUA UNIV. MEDIA SURVEY LAB (绿色和平与清华媒介调查实验室), CONSUMER SURVEY REPORT ON GMOS AND GM FOOD IN WUHAN AND CHANGSHA (武汉与长沙转基因作物及食品消费者调研报告) (2010), http://www.greenpeace.org/china/Global/china/publications/campaigns/food-agriculture/2011/ge-research-wch-2011.pdf [hereinafter CWC].

[148] *Id.*

[149] *Id.*

investigation in Wuhan City and Hangzhou City in 2010,[150] 48.8 percent of consumers surveyed thought the Ministry of Agriculture and governments at all levels should supervise the status of GM food labeling in the market; 61.7 percent supported including professional social organizations in the GM food labeling regime; and 19 percent thought industry associations should be incorporated into the group of third-parties.[151] In addition, 25.1 percent of consumers held the view that consumers themselves should also play a role in the compliance and enforcement of GM food labeling.[152]

This same report showed that – due to asymmetric information availability and impact from tradition – consumers are inclined to depend on governments to manage the industry.

Besides governments, consumers also trust in the power of social organizations to supervise the industry and provide more reliable information. About 30 percent of consumers believe consumers themselves should take part in such work. Taken together, these opinions indicate that consumers in China now prefer a more diverse and multi-level supervision system, involving government, social organizations, consumers, and all other potential powers. However, government restrictions often retard the development of social organizations.[153] Also, due to lack of organization, information, and available remedies,[154] consumers are too powerless to supervise the compliance of GM food labeling by the industry.

Too Many Small Enterprises

An additional barrier to a viable GM food-labeling regime in China is the vast number of small-scale food producers and processors.[155] In fact, this condition of China's food industry poses challenges for regulation of any sort. Indeed, most of the food-regulatory challenges in China originate in the small-scale farms, food processing plants, and small restaurants that are difficult to manage and monitor effectively.[156] This problem first emerged in July 2007, when the State Administration of Quality Supervision, Inspection and Quarantine investigated 448,153 food processors in China.[157] Of all the investigated food processors, seventy-eight percent had fewer than ten employees, about half of them had improper licenses, and 36.6%

[150]Dengya Ouyang (欧阳邓亚), *Research on Legal Problems of China's GM Food Labeling System* (我国转基因食品标识制度法律问题研究) 53 (master's degree thesis), *available at* http://cdmd.cnki.com.cn/Article/CDMD-10504-1011405028.htm.

[151]*Id.* at 53.

[152]*Id.*

[153]*Id.* at 71.

[154]*Id.*

[155]LINDEN J. ELLIS & JENNIFER L. TURNER, WOODROW WILSON INT'L CTR. FOR SCHOLARS, SOWING THE SEEDS: OPPORTUNITIES FOR U.S.-CHINA COOPERATION ON FOOD SAFETY (2008), *available at* http://www.wilsoncenter.org/sites/default/files/CEF_food_safety_text.pdf.

[156]*Id.*

[157]CHINA STATE ADMIN. OF QUALITY SUPERVISION, INSPECTION AND QUARANTINE, FURTHER STRENGTHENING FOOD PROD. AND PROCESSING SMALL WORKSHOPS AND SUPERVISION WORK: THREE PROMINENT REGULATORY SYS. TO ENSURE THE QUALITY AND SAFETY OF FOOd (2007), http://www.aqsiq.gov.cn/zjxw/zjxw/zjftpxw/200707/t20070711_33419.htm.

of them had no license at all.[158] The numerous small farms combined with small food processors present major obstacles in implementing both GM food labeling and traceability.[159]

V. RECOMMENDATIONS FOR IMPROVING GM FOOD LABELING LAWS IN CHINA

A. *Proposed Pathway*

This final section recommends six steps to align China's GM food labeling with the country's aspirations, expectations, and realities. It is clear that regulating GM food labeling indirectly through Agro-GMO regulations is problematic. The definition of "Agro-GMO" is unlikely to cover highly processed food distinctive from agriculture raw materials or products; therefore, Agro-GMO regulation cannot cover all GM food and cannot fully protect consumers' right to know. Moreover, the Ministry of Agriculture – the competent department for Agro-GMO management – isn't responsible for food supervision after it enters into market, while the Ministry of Health and the China Food and Drug Administration (CFDA) are authorized by FSL and have already established mature mechanisms to perform this duty. In this case, it is preferable to regulate GM food labeling directly by establishing special regulation under the authorization of 2015 FSL, which shall be carried out by the Ministry of Health and the CFDA. The following recommendations aim to provide guidance in the enactment of this special regulation and its enforcement.

B. *Specific Practical Steps*

Step 1: Regulate Voluntary GM Food Labeling

As illustrated, Chinese companies voluntarily use negative labeling like "non-GM" as a marketing tool. The lack of regulation of this marketing results in serious abuses and considerable consumer confusion. In response, China Central Television recently forbad "non-GM" advertisement for crops and their products that have not been commercialized in China in their GM varieties, such as rice and peanuts.[160] Truthful and appropriate voluntary labeling – negative and positive – protects and enhances consumers' rights to know.

Drawing on the experience of the evolving voluntary labeling of GM food in the United States, a voluntary regime in China should help fill the regulatory gap left by a limited mandatory GM food labeling system. The rapid expansion of GM food in China renders it difficult for the catalog in MMAGL to cover all the GM food in the market. In fact, it is infeasible to incorporate all GM into a catalog because GM foods are constantly expanding and diversifying in China. It is no surprise that the catalog

[158] *Id.*

[159] ELLIS & TURNER, *supra* note 156, at 41.

[160] With respect to crops that have been commercialized in China in GM varieties, such as soybean and rape, and their products, companies cannot use "healthier," "safer," or other misleading words in their advertisement unless they proffer adequate evidence. *See Censorship Requirements for "Non-GM Product" Advertisement* (央视关于"非转基因产品"广告的审查要求通知), CCTV (Oct. 10, 2014, 11:19 AM), http://1118.cctv.com/2014/10/10/ARTI1412911094790531.shtml.

would be outdated as soon as it is enacted.[161] In addition, economic or even food security concerns, as exhibited in Vermont with its GM law, may prompt exemptions from mandatory GM labeling for some GM foods.[162] Therefore, in order to protect fully consumers' rights to know, a voluntary labeling regime should be provided to encourage relevant industries to voluntarily label their products.

A dual mandatory and voluntary labeling regime would benefit the present Chinese labeling system. Companies should use negative labels in a uniform and objective way to avoid misleading consumers: if there is no GM counterpart in the market, such variety of food should not be labeled as "non-GM". This rule will not cause consumers to mistakenly believe that foods without a "non-GM" label are inferior.[163] In addition, from an international trade perspective, China's regulation on negative labeling should be consistent with similar regulations of trade- partner countries, especially the US and the EU, thereby reducing potential trading conflicts.[164]

Step 2: Specify GM food Labeling Requirements

As previously, the lack of detailed labeling requirements has caused many problems, such as lack of uniformity and prominence, which undermine the ability of GM food labeling to protect consumers' rights to know. In addition, research on consumers' attitudes towards GM food has shown that a simple label that only indicates whether a product is or is not GM is not enough. In order for a labeling regime effectively to facilitate consumer choice, the label must convey information that consumers understand. Further, consumers must trust the information, and the information conveyed must allow consumers to differentiate among products.[165]

Specific requirements for GM food labeling enable consumers to differentiate among products. MMAGL specifies the language to be used for GM food and requires the label to be "prominent," but does not detail location, size or other features key to differentiation.[166] Though LAGT specifies these features, it only applies to the cataloged Agro-GMOs;[167] it does not extend to other Agro-GMOs and downstream products. In specifying label location, China can borrow from the Vermont GMO-labeling model: the manufacturer could be required to label the packaging of GM food, while the retailer could be required to post a label on the shelf or bin for GM food that is not separately packaged.[168] In addition, China could adopt the EU model to require the GM labeling words to appear in the list of ingredients immediately following the

[161]Mingyan Wei, *Ministry of Agriculture: Voluntary Labeling is the Future of GM Food Labeling* (农业部：自愿标识是转基因食品标识管理趋势), BEIJING NEWS (Oct. 19, 2014), http://www.qh.xinhuanet.com/2014- 10/19/c_1112879763.htm.

[162]*See* Vermont GM Law, *supra* note 109, at § 3044.

[163]Zhusheng Ye (叶竹盛), *Should GM Food be Labeled*? (转基因食品要不要贴标签), PEOPLE.CN (Oct. 22, 2014), http://politics.people.com.cn/n/2014/1022/c70731-25880973.html.

[164]Xiongbing Qiao, Junya Lian (乔雄兵，连俊雅), *On Genetically Modified Food Labeling Governed by International Law: From the Angle of the Cartagena Protocol on Biosafety*(论转基因食品标识的国际法规制——以《卡塔赫纳生物安全议定书》为视角), 32 HEBEI LAW SCIENCE 134, 134–143 (Jan. 2014).

[165]Federici, *supra* note 102, at 548.

[166]MMAGL, *supra* note 42, at Art. 7.

[167]LAGT, *supra* note 46, at Art. 1.

[168]Vermont GM Law, *supra* note 109, at § 3043(b).

ingredient concerned.[169] This will help consumers to relate the GM information directly to the corresponding ingredients. Consistent with the EU model, the words should be as large as the words used in the ingredient label.[170] Furthermore, in order to eliminate loopholes, other potential confusion should also be prevented, such as requiring significant differentiation between the color of the label and the color of the background.

Background information about GM technology and reasons for its use should be provided to help consumers better understand the food label. As the research on consumers' attitude towards GM food introduced in shows, consumers need more background information. The science of GM is too complicated and technical for common consumers to understand.[171] Education can help resolve this problem, including through a QR code.[172] Consumers can scan QR codes by using their cellphones to access to online databases, and thus acquire more information than from the package itself. As noted, research shows that being aware of the benefits of GM technology could help persuade or even neutralize the negative attitudes consumers have towards GM food. The motivations behind using GM products factor into the consumer's choice to buy or avoid the product, so information concerning why GM materials are used should also be provided.

Step 3: Set Reasonable Exemptions and Thresholds

China GM food labeling laws do not stipulate thresholds for amount of GM material in food products under which GM label is not required or any other exemptions.[173] Many Chinese scholars doubt the need for a threshold, because no scientific evidence has yet proved what level of GM materials can be deemed safe for human health.[174] The threshold determination then is not a scientific question, but a question of public policy, grounded on the notion that the public shall determine the extent of their right to know.[175] In other words, the threshold determination should be set at whatever level consumers consider material, taking economic achievability and administrative feasibility into consideration.[176] This point is underscored by the fact that different countries set their thresholds at dramatically different levels, from the EU's 0.9 percent and Japan's 5 percent, based on public policy rather than science.

In fact, regardless of the exact level, a threshold itself is significant – it enables the labeling system to be more workable and enforceable.[177] The EU recognizes that it is

[169]*GMO Labelling: Guidelines - What Does Labelling Look Like?*, GMOCOMPASS (Feb. 15, 2006), http://www.gmo-compass.org/eng/regulation/labelling/90.gmo_labelling.html. .

[170]*Id.*

[171]Federici, *supra* note 102, at 547.

[172]Wong, *supra* note 110, at 279.

[173]DEP'T OF CHINA SCI. & TECH. ASS'N, *supra* note 36, at 18-19.

[174]Cailing Guo (郭彩玲), Research on China's GM Food Labeling (我国转基因产品标识问题研) 26 J. PARTY SCHOOL OF SHENGLI OILFIELD, 83, 83–86, (2013).

[175]*Id.* at 83-86.

[176]Federici, *supra* note 102, at 552–53.

[177]*Id.* at 553.

practically impossible to label at all instances of genetic modification.[178] As for China, lack of a threshold has been widely criticized for causing noncompliance. Because GM materials are widespread in China, it is impossible for companies to avoid all GM materials even if they do not intend to use them.[179] As a result, these companies doubt the legitimacy of labeling law and refuse to comply with it.[180] Adopting a 0.9 percent threshold in China would ensure consonance with EU policy, as well as US state GMO-labeling initiatives, thus likely avoid potential trade conflicts.[181]

As for other exemptions, it is important to consider that China holds a relatively moderate attitude towards GM technology compared to the EU, which only adds an exemption for processing aids.[182] The Vermont model may have more referential value to China's GM food labeling law than the EU model. The exemptions stipulated in Vermont's GM Law are reasonable and should be subject to further discussion and more research considering Chinese conditions. For instance, Vermont's GM Law exempts "a raw agricultural commodity or processed food derived from it that has been grown, raised, or produced without the knowing or intentional use of food or seed produced with genetic engineering." In consideration of China's small-scale peasant economy and low population education level, exempting such GM food from labeling requirement is both logical and more administratively feasible.

The one Vermont exception that we suggest not be adopted is for GM food sold in restaurants. Because of GM food's lower price, restaurants have strong incentives to use them in order to control cost. For instance, restaurants are reported to use GM soybean oil heavily in the city of Jinan in China.[183] Compared to non-GM soybean oil's price of 12 RMB per liter, GM oil is only 8.9 RMB per liter.[184] As the chef of a premium hotel has said, using low-price GM soybean oil is not a secret in the restaurant industry.[185] An exemption for restaurants, which would include fast food chains, may cause GM food producers to target sales to food establishments in order to avoid new labeling regulations.[186] Fast food chains should especially not be exempt from the labeling requirements because of their large market presence.[187]

[178]During the production, transportation, and processing of agricultural products, a small amount of mixing between different fields and different shipments is difficult to prevent. For this reason, even when a product was intended to be completely GM-free, traces of GM substances are often still detected. Products containing these unintentional or technically unavoidable mixtures with GM material do not require labeling, as long as the GM content does not exceed 0.9 percent.

[179]Tao Sun (孙滔), *Why not Mandatory GM Labeling?* (为何不要转基因强制标识？), AGROGENE NEWS (Aug. 19, 2014), http://www.agrogene.cn/info-1698.shtml.

[180]*Id.*

[181]Qiao, *supra* note 165, at 134–143.

[182]Council Regulation 1829/2003, Preamble 16, 2003 O.J. (L 268) 1, 2–3 (EC).

[183]Jing Tan, *Most Cooking Oil Sold in Jinan is Produced with GM Soybean and Restaurants Use Low-Price Oil Most* (济南食用油原料多为转基因大豆 饭店多用廉价油), SDCHINA (May 16, 2013), http://jinan.sdchina.com/show/2624566.html.

[184]*Id.*

[185]*Id.*

[186]*See* Janet Adamy, *McDonald's Loses Its Trans Fats*, ALL WALL TST. J. (May 23, 2008 11:59 PM ET), http://online.wsj.com/articles/SB121151133018416567.

[187]*Id.*

Step 4: Expand the Catalog of Covered GM Food Varieties

Since the first batch of Agro-GMOs was announced 13 years ago, the scope of GM food in China has expanded and diversified. As mentioned heretofore, GM pawpaw, which is not included in the first batch, has now been approved for commercialization.[188] In addition, it is reported that GM rice has been commercially cultivated without approval and has appeared in the markets and restaurants in Hubei area, including in the mess halls of some elementary schools.[189] As these GM rice entered into the children's meals, it caused wide debate among the worried parents.[190] Though such illegal GM food should be banned instead of being labeled, this development indicates that numerous GM foods may have unknowingly entered into people's lives. This poses a new difficulty in protecting consumers' rights to know and to human health.

Though the coverage of Agro-GMOs in RAGSM and MMAGL is vague and can be interpreted to include all food containing GM ingredients or produced from GM materials,[191] in practice only labeling of the Agro-GMOs in the catalog is being substantively enforced.[192] Unique to China, this catalog approach has advantages. It is easy to understand, and theoretically it can work well in tandem with China's GM products certification system.[193] If illegal commercialization of GM food without certification is well regulated, the catalog can be inclusive enough if it is maintained in concert with the certification system.

The catalog scheme is feasible in China's context, but needs to be constantly updated.[194] For instance, at the very least GM pawpaw should be added. In addition to updating the catalog to reflect current usage, GM foods should also be added if it is reasonable to believe that they will be commercialized in the near future. This step will increase the longevity of the catalog.[195] For example, although GM rice has not yet been approved for commercialization, it has acquired GM biosafety certification from the Ministry of Agriculture.[196] This certification, combined with its profit-earning potential, means it will likely be widely used in the near future and thus it should be included in the catalog.

More importantly, downstream products of all the Agro-GMOs in the present catalog should be added. For instance, soybeans are used to produce a wide variety of foods, including soybean oil, soybean powder, soybean milk and other numerous food ingredients and additives. Lecithin extracted from soybeans, for example, is used as an emulsifier in chocolate, ice cream, margarine, and baked goods. Because the first batch only specifies certain kinds of downstream products, like soybean oil and

[188]SINA NEWS, *supra* note 11; Jing Li & Li Wang, *Why Pawpaw are not Labeled with GM Labeling? Ministry of Agriculture Explains* (木瓜为何不标识转基因？农业部解释原因), PEOPLE. CN (Oct. 17, 2014), http://sn.people.com.cn/n/2014/1017/c190207-22639222.html.

[189]GREENPEACE, *supra* note 28, at 1.

[190]*Id.*

[191]RAGSM, *supra* note 37 at Art. 28; MMAGL, *supra* note 42.

[192]DEP'T OF CHINA SCI. & TECH. ASS'N, *supra* note 36, at 17–18.

[193]Ouyang, *supra* note 151, at 66.

[194]*Id.* at 66.

[195]*Id.* at 66.

[196]GREENPEACE, *supra* note 28, at 1.

soybean powder, the effect of selective compliance is serious.[197] Few of these downstream products are labeled; most of them are ignored by the industry and by the enforcing departments.

The EU's generalized scheme can be assimilated into the design of the catalog to improve the present scheme. Specifically, different from the purely enumerative scheme China adopts now, such as "soybean, soybean seed, soybean oil, soybean powder . . . ,"[198] a more desirable scheme would be "soybean seed, soybeans, and food produced with soybeans", "maize seed, maize, and food produced with maize." This scheme makes it clear that all downstream products, unless they meet some other exemption criteria, should be labeled as long as they contain GM materials. With such improvement in the law, the industry would have no excuse for incompliance, and relevant departments would have an unambiguous guide to enforcing the law.

Step 5 : Improve Traceability

Though China's GM food labeling system is process- based, as is the EU's, rather than product-based, as in the US, it does not incorporate traceability requirements. EU's traceability laws require that all operators at all marketing stages of GM-containing food products must notify the operators of subsequent stages (those to whom they are passing on the food material) in writing that the food contains GM material, and they must supply the next operator with the GM material's ID number.[199] Traceability requirements are helpful in tracing problems within the food chain and can identify or rule out the possibility that a contamination was associated with a GM material.[200]

Because the food industry and food markets are highly scattered in China, setting up a traceability system will significantly aid the government in enforcing China's GM labeling law.[201] Without a traceability system, it is extremely difficult for the government to find out who should bear responsibility, because farm, food distributors, food processors or food retailers may add some GM materials to the food, intentionally or unintentionally. Though implementing the traceability laws would be an enormous project, it would more fully protect consumers' rights to know and avert future costs.[202]

Step 6: Education and Supervision by the Government and NGOs

In order for a labeling regime to facilitate effectively consumer choice, the label must convey information that consumers understand consumers must trust the information, and the information conveyed must allow consumers to differentiate among products.[203] Specifying labeling requirements can help consumers differentiate

[197]MMAGL, *supra* note 42, at Annex.

[198]*Id.*

[199]Council Regulation 1830/2003, arts. 4(A)(1) & (2), 8, 2003 O.J. (L 268) 24, 26-27 (EC); *see also Traceability*, GMO COMPASS, http://www.gmo-compass.org/eng/glossary/182.traceability.html (last visted Jan. 23, 2016).

[200]Caixia Sun, Xin Liu, Junfeng Xu, Xiaoyun Chen & Zhiheng Zhang (孙彩霞，刘信，徐俊锋，陈笑芸，张志恒). *GM Food Traceability System in the EU* (欧盟转基因食品溯源管理体系), 21 ZHEJIANG AGRIC. J. 645, at 645–648 (2009).

[201]*Id.*

[202]*Id.*

[203]Federici, *supra* note 102, at 547.

GM foods from others, but it cannot by itself fulfill the task of conveying information that consumers understand. A focused education campaign is needed. In addition, for consumers to trust the information, third parties need to be involved.

The education campaign should aim to informing the public both about the inconclusiveness of studies regarding GM food safety and about the importance of GM technology to the national interest in food security. Because of the purported safety risks of GM food, many companies fear that GM labeling will mislead consumers into thinking that the labeled foods are inferior to other food without labeling.[204] As consumer polling has shown, consumers often prefer to avoid purchasing GM food simply because they do not understand GM technology. Research suggests that the benefits of GM technology could influence consumers to purchase GM food. At the very least, education can help consumers make an informed decision on the basis of objective scientific evidence and all relevant factors.

In addition to an education campaign, strengthening supervision of GM food labeling is imperative. Though the problems of China's GM food labeling regime may be averted by better rulemaking, a lack of supervision and enforcement will undermine even the best rules.[205] The EU's experience demonstrates that companies even prefer to withdraw from using GM materials completely to avoid the loss brought by GM labeling.[206] Therefore, supervision is required to compel companies to comply with labeling requirements.

The remaining problem is who should take responsibility for education and supervision. Thirteen years' practice of governmental supervision indicates that solely relying on the power of government is not enough, especially in China's fractured market. Social powers in China should be mobilized to educate consumers and supervise the industry. Social organizations should play a more significant role in education and supervision. As the research introduced in section 5 shows, consumers prefer professional social organizations participating in the labeling regime instead of simple reliance on the government. However, such social organizations have not developed well due to government restrictions.[207] For instance, if an NGO wants to be legitimately registered, it has to find a government department to attach to as a prerequisite.[208] This requirement is big barrier and deters many NGOs from being established.[209] Fortunately, the Standing Committee of NPC recently passed a bill to cancel this unreasonable prerequisite, which may portend a new era for NGOs in China.[210]

[204]Appleton, *supra* note 147, at 569.

[205]Lin Liu & Yongguan Zhai, *Lack of GM Food Labeling may Violate Consumers' Rights To Know* (转基因食品缺乏标识或侵犯消费者知情权), INTERNATIONAL HERALD TRIBUNE (Nov. 13, 2013), http://ihl.cankaoxiaoxi.com/2013/1112/300319.shtml.

[206]Food Chain Evaluation Consortium, *supra* note 104, at xvii; GMOs: EU's Legislation on the Right Track, *supra* note 104.

[207]Yan Zhang & Xiaomin Lei, *NGO in Predicament and Deadlock* (困顿NGO), SINA NEWS (June 11, 2009), http://finance.sina.com.cn/roll/20090611/12376335597.shtml.

[208]*Id.*

[209]*Id.*

[210]Yongji Wang, *4 Categories of Social Organization can Register Directly and Spring is Coming for Gross-roots NGOs* (四类社会组织可直接申请登记 草根NGO迎来春天), CHINA YOUTH NEWS (Mar. 15, 2013), http://www.chinanews.com/gn/2013/03-15/4646961.shtml.

VI. CONCLUSION

The dichotomy in China over the labeling of GM food manifests itself in interesting and poignant ways. For example, on Oct. 16, 2014, when eighteen biotechnology experts from ten different countries attended a conference in Beijing to discuss the present global status and the future of GM crops, it was announced that, "GM technology doesn't have any negative influence on human beings and animals."[211] At the same time, the seventy-one lawyers mentioned in this article are engaged in litigation against companies who fail to label GM.[212] Adding complexity to analysis is the sturdy resistance by consumers towards GM foods, as manifested in an August 2014 poll conducted by Southern Metropolis Daily, showing that of the 16,679 people investigated, 9,057 (54.3%) explicitly said that they did not support GM food.[213]

Not only in China, but also worldwide, the debate over GM food appears intractable: it is more than just a scientific problem or a legal problem; it is a communication, ethical, cultural, and political problem. In spite of this debate, the EU requires compulsory labeling to protect consumers' rights to know, and states in the US are increasingly pursuing their own mandatory GM food labeling laws. As the seventy-one lawyers have said, "what we really need is not a debate, but protection of consumers' rights to know."[214] This article does not try to persuade the other side on whether GM foods are safe or not, but instead focuses on the practical problems of improving China's mandatory GM food labeling system.

Consumers' rights to know GM information have encountered serious obstacles in China. GM food labeling is currently regulated under Agro-GM regulation instead of special GM food regulation, leading to inadequate coverage of GM food and incapacity in enforcement. In practice, most GM foods in the marketplace are not labeled, especially downstream products of GM crops. Those GM products that are labeled are still noncompliant, resulting in lack of uniformity and of prominence. The scope of GM foods that are subject to labeling is outdated, and non-GM labels often misrepresent and confuse consumers.

In order to solve these problems, a regulated voluntary labeling system should be established to supplement the inadequacy of the mandatory one. In addition, labeling requirements should be specified in more detail to restrain companies' discretion. A threshold and other exemptions should be established. At the same time, the coverage of GM food should be expanded to fully protect consumers' rights to know. In order to supervise effectively GM labeling, a traceability requirement like the EU's should be established. Finally, an education campaign is required to help consumers make better use of GM labeling and avoid misunderstandings. Supervision should also be strengthened to ensure compliance.

As Chinese national legislature recently decided to require mandatory GM food labeling in 2015 FSL, the era of regulating GM food labeling under Agro-GM

[211] *Id.*

[212] Ziru Yu, *71 Lawyers Sued Producers for the Unclearness of GM Labeling and 9 of 11 Cases are Accepted* (71 名律师起诉生产商转基因标识不清 起诉 11 件受理 9 件), XINHUANET NEWS (Sept. 30, 2014), http://news.xinhuanet.com/legal/2014-09/30/c_127053101.htm.

[213] Jin Huang, *GM Food Labeling is Messy and Citizens Appeal for Rights to Know* (转基因食品标识混乱 市民呼吁知情权), SOUTHERN METROPOLIS DAILY NEWS (AUG.21, 2014), http://health.oeeee.com/html/201408/21/230427.html.

[214] *Id.*

regulation is coming to an end. The newly revised FSL and its incoming administrative rules are likely to change the dissatisfying status quo of GM food labeling and improve protection of consumers' right to know GM information to a higher level. Hopefully, the analysis and recommendations of this article can contribute this process.