

California's Proposition 37: Effects of Mandatory Labeling of GM Food

Colin A. Carter, Guillaume P. Gruère, Patrick McLaughlin, and Matthew MacLachlan

Californians will soon vote on Proposition 37, mandating that genetically modified (GM) food is labeled. Supporters argue that mandatory labeling responds to consumers' rights, offers greater choice, and provides more information on food content. But the specifics of Prop 37 will result in a much different outcome. Food category choice will decrease and the added labeling information will be imprecise. Prop 37 will introduce a double standard for accidental GM purity in organic versus non-organic foods, favoring organic.

In the upcoming November election, California voters will decide the fate of the "California Right to Know Genetically Engineered Food Act," Proposition 37, a law that would mandate labeling of foods produced from genetically modified (GM) crops—also known as either biotech or genetically engineered (GE) crops. Consumer activists, lawyers, and organic-food groups are behind the initiative, while agribusiness, food manufacturers, and retailers are opposed.

Significant funding for both sides of the issue is coming from outside California, so there is national interest in Prop 37. Recent attempts to pass mandatory GM labeling laws in states such as Connecticut and Vermont or at the Federal level have failed.

If implemented, Prop 37 would begin to take effect in 2014 with some minor exemptions in place until 2019.

It would constitute the first mandatory GM labeling law in the United States. Prop 37 would apply the strictest threshold level for unintentional traces of GM ingredients of any international mandatory labeling scheme, including that of the European Union (EU) where the threshold is 0.9% for adventitious (accidental) presence of GM. The California initiative would implement a zero-tolerance policy for accidental presence of small amounts of GM substances, even if the U.S. government has approved the GM material for human consumption.

It will be impossible for farmers and the food industry to comply with such an impractical tolerance standard. In the U.S. where GM crops are common, zero tolerance for commingling with non-GM is not feasible due to the technicalities of grain production, handling, processing, and storage. Adventitious presence of unintended ingredients is an issue for all foods, not just GM foods, and it is acknowledged as a feature of a complex food system.

Other countries that have introduced mandatory GM labeling have established thresholds to cope with the practicalities of low levels of unintended material. For instance in Japan, a country much more averse to biotech foods than the U.S., the legal labeling tolerance level for the accidental presence of GM ingredients in non-GM food is 5% of the top three ingredients. The Japanese government acknowledges that a total and complete separation of dust and admixtures from GM and non-GM crops along the entire production and transport chain is not possible. As a result of a practical labeling scheme, the Japanese consumer can purchase non-GM products that are not

organic, an option that would all but disappear with Prop 37 in California.

Furthermore, in Japan, like in Australia, highly processed products such as canola oil, produced with GM crops, are exempt from labeling. In contrast, the same canola oil would have to bear a cautionary label under Prop 37, in spite of difficulties testing whether the oil has indeed been derived from GM canola.

Earlier this year, the American Medical Association formally opposed the mandatory labeling of GM food. The National Academy of Sciences and the World Health Organization previously reached similar conclusions—there is no science-based justification for mandatory labeling of GM food because there is no evidence that such foods pose any risks to human health. Because it will be interpreted as a warning, mandatory labeling would imply a food safety risk that does not exist, and this in itself would be misleading to consumers.

If passed, the full economic effects of Prop 37 are uncertain but there is no doubt that the measure would remove most of the certified non-GM processed foods from the California market because of the zero tolerance criterion for low levels of unintended material. Food manufacturers and retailers would be unwilling to supply a large number of both GM and non-GM processed food products due to litigation risk.

For instance, there would be a change in the selection of corn flakes boxes on the food shelf. The consumers' choice would be either organic corn flakes or corn flakes labeled as possibly containing GM. It is believed that 70–80% of processed food intentionally contain some corn, canola or soy ingredients, so these products

Table 1. Key Elements of Proposition 37

- Would become law on July 1, 2014.
- Would change CA state law to require that some Genetically Engineered (GE) foods sold through retail stores be labeled as such, with the Department of Public Health responsible for enforcing the labeling requirements.
- Wording on labels would vary by product and read as follows:
 1. “Genetically Engineered” on the front package for raw foods. If the item is not separately packaged these words would appear on the shelf.
 2. “Partially Produced with Genetic Engineering” or “May be Partially Produced with Genetic Engineering” for processed foods containing GE ingredients.
- Requires farmers, food manufacturers, wholesale merchants, and retailers to maintain traceability records for products not labeled.
- Excludes from labeling certain food products: alcoholic beverages, organic foods, food derived entirely from animals (meat, eggs, and some dairy products) and restaurant food.
- Excludes certain raw foods produced without the intentional use of GE seed.
- Prohibits the use of terms such as “natural,” “naturally made,” “naturally grown,” and “all natural” in the labeling and advertising of GE foods, or possibly all foods.
- After July 1, 2019 the tolerance level for adventitious presence of GE ingredients is zero. Between 2014 and 2019 there will be a very low level tolerance for ingredients that account for less than 0.5% of final product weight.
- Opens the door for consumer litigation against farmers and firms in the food industry with potential damages equal to or greater than the retail price of each package or product alleged to be in violation. Consumers could successfully sue without being required to prove any specific damage from the alleged violation.

Source: <http://www.sos.ca.gov/elections/ballot-measures/qualified-ballot-measures.htm>

would have to be labeled, reformulated with non-GM substitutes, or removed. Other processed food products that do not use soy, corn, or canola could also be affected and require labeling, because they might contain unintended trace amounts of corn, canola or soy.

As a consequence, Prop 37 would result in many products on the food shelf carrying a GM label. It might get to the point where there are so many products with GM labels that most consumers would just ignore the labels because they would be everywhere.

For foods that contain a relatively small amount of corn or soy ingredients, the food industry could either label their products as GM (regardless of actual content) or look for alternative, and possibly inferior, non-GM substitute ingredients to avoid labeling. For instance, food companies would

have an incentive to use alternative ingredients such as imported palm oil to replace soybean or canola oil, despite potential health problems associated with palm oil and environmental concerns due to palm oil expansion in Asia.

Mandatory labeling requirements could inhibit further development of GM technology in California’s food industry. The United States has criticized the EU’s mandatory GM labeling as being nothing more than international trade protection from foreign competition. In fact, over the last twenty years, the USDA, the FDA and the State Department, under successive administrations from both sides of the political spectrum, have publicly opposed this type of regulation at the international level because of its market distorting effects. Prop 37 may also be interpreted as an attempt to stifle

competition and distort markets.

In this article we outline the economic implications of GM food labeling programs to provide insight into the likely effects of introducing mandatory labeling of GM foods in California under Prop 37.

Supporters of Measure 37 argue that labeling provides California consumers additional information and allows them to avoid consuming GM food. But California food consumers have that choice now. They can purchase from three different food categories: 1) conventional foods (which may or may not contain GM), 2) organic foods (non-GM), or 3) voluntarily labeled non-GM food that is not organic.

Compare this current situation to the likely outcome under Prop 37 (see Table 1 for Prop 37 details). For targeted food products derived from GM grains, Prop 37 will most likely replace the existing three food categories listed above with just two categories: 1) organic, or 2) products labeled as “may be produced with genetic engineering.” In other words, there will be numerous GE labeled products.

For highly processed food products, a non-labeled option will remain but may only make sense using either lower grade or more expensive alternative ingredients. In general the organic suppliers will gain market share because the producers of most certified non-GM foods will have to change their label to read “may contain GM,” whereas the organic label will not be forced to change, even if the organic product has the same trace amount of GM as the non-GM counterpart. Since the per-unit cost of producing non-GM crops is less than organic crops, overall food prices will rise on average as non-GM food products lose market share.

California Right to Know Genetically Engineered Food Act

Table 1 summarizes the key features of Prop 37–The California Right to Know

Genetically Engineered Food Act. If passed, it will require retail labeling of some raw agricultural GM commodities as being “genetically engineered” and processed foods containing GM ingredients as “(may be) partially produced with genetic engineering.”

Exemptions from labeling would be granted to alcoholic beverages, restaurant and ready-made food, foods “entirely” derived from animals, and any food certified as USDA Organic. Also exempt would be any raw agricultural commodity that could be certified that it was produced without the intentional use of GE seed.

Furthermore, Prop 37 would prohibit food labels with the message “natural,” “naturally grown,” or anything similar. The initiative charges the California Department of Public Health with enforcement, which the Legislative Analyst Office predicts will cost \$1 million annually.

Prop 37 sets purity standards for non-GM food that are much higher than existing standards for organic food. Organic certification is “process-based,” which means that as long as the farm is an approved organic farm, following the prescribed agronomic practices, there is less industry concern over accidental contamination and therefore no regular testing for GM.

Unlike Prop 37, USDA organic standards do not have a strict “zero-tolerance” standard for accidental presence of GM material. In fact, the USDA has not established a threshold level for adventitious presence of GM material in organic foods. Organic growers are listed among the coalition of supporters of Prop 37, which is understandable because of the exemption provided to them by Prop 37. If Prop 37 passes, a food product could be labeled as organic and escape the testing and litigation issues facing a similar non-organic product even if both products contained identical accidental trace amounts of GM material.

Table 2. Sample Voluntary Label Today: Whole Foods and Trader Joe’s

- Whole Foods 365 Everyday Value® products are formulated to avoid GE ingredients.
- All products in the Trader Joe’s label promise “NO Genetically Modified Ingredients.”

Mandatory labeling is unnecessary because voluntary labeling now gives California consumers a choice to purchase food products that do not contain GMOs (Table 2). One existing voluntary “GM-free” labeling program is the Non-GMO Project, a verification process organized by food retailers such as Whole Foods Market. The Non-GMO project uses the same 0.9% threshold as the EU and under this scheme, retailers receive a price premium for selling non-GM products.

Whole Foods carries numerous Non-GMO products under its private label, 365 Everyday Value®, and many of these products are also organically produced. Similarly, all food products sold at Trader Joe’s with the Trader Joe’s label are sourced from non-GM ingredients (according to their website), but they are not part of the Non-GMO project.

Like Whole Foods, Trader Joe’s is not actively supporting mandatory labeling of GM foods under Prop 37, perhaps because it would disrupt their product lines. Several processed food products in Trader Joe’s stores that are not privately branded would likely require the new cautionary label under Prop 37, not to mention all of the products under the Trader Joe’s line that will not meet the zero tolerance (unless they are organic).

The issue surrounding Prop 37 is similar to an earlier debate that took place in the 1990s over dairy products from cows treated with rBST (a synthetic growth hormone that increases milk production by cows). The U.S. FDA ruled that no mandatory labeling of products derived from cows receiving the growth hormone was necessary because the milk was



These products are labeled “Natural” or “All-Natural” and they contain corn, corn meal, canola oil or soybean oil. If Proposition 37 passes, the “Natural” labels would have to be removed. The products would then have to be reformulated to avoid GM labeling or most likely labeled with “Partially Produced with Genetic Engineering.”

Table 3. International Examples of GM Food Labeling

Country	Mandatory or Voluntary	Threshold Level for Unintended GMOs	Are Some Foods and Processes Exempt?
European Union	Mandatory	0.9%	Yes
Australia-New Zealand	Mandatory	1%	Yes
Japan	Mandatory	5%	Yes
South Korea	Mandatory	3%	Yes
Canada	Voluntary	5%	n/a
United States	Voluntary	unknown	n/a
<i>n/a means not applicable</i>			

indistinguishable from products derived from untreated herds.

Then the state of Vermont passed a law requiring that milk from rBST-treated cows be labeled to better provide consumers information. The Vermont legislation was based on “strong consumer interest” and the “public’s right to know.” Dairy manufacturers challenged the constitutionality of the Vermont law under the First Amendment and they won.

The Second Circuit Court of Appeals struck down the Vermont law, ruling that labeling cannot be mandated just because some consumers are curious. The court ruled “were consumer interest alone sufficient, there is no end to the information that states could require manufacturers to disclose about their production methods”... “Instead, those consumers interested in such information should exercise the power of their purses by buying products from manufacturers who voluntarily reveal it.” (International Dairy Foods Association v. Amestoy 92 F.3d 67 1996).

Instead of mandatory labeling, a non-rBST standard was voluntarily developed by the industry with specifications from the FDA. It has been largely applied to dairy products, giving consumers a choice; but unlike mandatory labeling, producers voluntarily responded to consumer demand for non-rBST milk, following a bottom-up process—it was not a mandate imposed on them by top-down regulations.

Other Labeling Programs

There are a variety of international mandatory GM labeling programs differing by the products to which they are applied, the mandated adventitious threshold, and whether they apply to the “product” as a whole or to the “process” (i.e., to specific ingredients). Table 3 summarizes the mandatory labeling laws of a select group of developed nations. As shown in the table, mandatory labeling of GM food exists and is enforced in places like Japan, the EU, South Korea, Australia, and New Zealand. Some developing or transition economies (not shown in Table 3) also have mandatory labeling but without strict enforcement.

With mandatory labeling, consumers are not necessarily provided with greater choice at the food store. Furthermore, there is a substantial amount of GM food eaten in the EU and Japan that does not have to be labeled. These products include certain animal products, soya sauce and vegetable oils (Japan only), among others.

Internationally, the Codex Alimentarius Commission, an international standards-setting body for food, examined and debated GM food labeling for over twenty years without reaching any consensus. In 2011 a decision was eventually made, but the final text approved by all countries does not provide any recommendation as to the labeling of GM food. It only calls on countries to follow other Codex guidelines on food

labeling (whether voluntary or mandatory). This non-endorsement means that countries using mandatory labeling could face legitimate claims of unfair trade restrictions resulting in a World Trade Organization (WTO) dispute.

A labeling initiative similar to California’s Prop 37 appeared on the ballot in Oregon in 2002. This initiative also proposed mandatory labeling, but defined an adventitious threshold of 0.1% per ingredient. Despite a claim of an overwhelming level of public support for GM labeling, the initiative ultimately failed with 70% voting “no.” Detractors warned consumers of substantial food cost increases due to the extremely low threshold. Additionally, even if the measure had passed, it was unlikely that producers would have segregated GM foods from non-GM, non-organic, as the costs would have been prohibitive—especially for a relatively small state with a population fewer than four million.

The bulk of private costs incurred as a result of labeling requirements are from efforts to prevent or limit mixing within the non-GM supply chain, known as identity preservation (IP) programs. The cost of any IP program depends critically on the level of the adventitious presence threshold specified in the labeling program. In the case of Prop 37 these costs would be incurred throughout the processed food industry. For instance, a firm marketing a wheat food product would incur costs to ensure its product did not contain trace amounts of soy, canola, or corn, because these grains all use the same grain handling and transport system.

The goal of providing consumers with additional information and choice is only met when both (GM and non-GM) product types are carried in food stores. In the EU, companies resorted to substituting ingredients to avoid the label, using lower quality and/or higher priced inputs, something that could also happen in California for processed

products. EU consumers were not offered much new information, since no products carried a GM label after the introduction of mandatory labeling. In fact, the EU proponents of labeling are not satisfied with the existing EU regulations because of its exemptions and they have asked for an extension of labeling to include animal products.

Organic Industry Impacts

Given that the proposed California threshold is 0%, a scenario in which both GM and non-GM (non-organic) products are offered side-by-side in the market seems unlikely. Some non-GM products may remain unlabeled if food companies are able to find substituting ingredients that are not at any risk of containing GM. But certified non-GM products will mostly disappear. As U.S. corn, canola, and soybean production uses primarily GM varieties, Prop 37 labeling standards will force change in the composition of retail products offered.

As the initiative applies only to California, it may not be profitable to undergo a reduction of GM inputs for one state. If this is the case, then the vast majority of food products that are not completely GM-free will bear the new label. As a consequence, a fraction of consumers now wary of the label may shift their consumption towards organic. Such a transition implies potential gains for organic growers but potential losses for conventional growers.

Today, a move towards “non-GM” or “naturally grown” labels is underway, especially with natural grocers. Some organic corn and soybean growers in the U.S. have converted back to conventional with non-GM seeds, thereby saving labor and other costs, while still getting similar price premia. The “non-GM” or “natural” products are the closest competition for organic products now; but they will be reduced or eliminated with Prop 37 due to

Table 4. Likely Impact of Proposition 37 on Various Foods and Beverages

Products That Will Not be Affected	Labeled as GM	Comments
Organically Certified	No	Exempt even though they may contain some low level GM
Animal Products (meat, dairy, etc)	No	Exempt even though animal feed grains are largely if not entirely GM. In addition, some animal products are produced with GM processing aids (enzymes, yeast etc.)
Alcoholic Beverages	No	Exempt even though they contain some GM or use a GM processing aid
Restaurant Food	No	Exempt but may contain high levels of GM
Fruits & Vegetables	No	No approved GM varieties at present time except some papaya and squash
Products That Will Be Affected		
Processed Foods Containing Soy and Corn Ingredients	Yes	Accounts for a very large share of items in food stores (baked goods, ready to eat foods, snack foods, etc). Will either have to be labeled GM, use alternative ingredients to avoid the label, or switch to certified organic
Non-GM Labeled Foods	Yes	Will have to carry a label due to zero tolerance and risk of lawsuit or convert to certified organic

forced relabeling and the prohibition of terms such as “naturally grown” on food labels (Table 1). Table 4 outlines the likely impacts of Prop 37 on various categories of food and beverages.

Conclusion

The stated intentions of the California Right to Know Genetically Engineered Food Act, Proposition 37, are confusing. Although this legislation is claimed to be for the consumers’ right to know, proponents have indicated this is a first step against GM foods. If Prop 37 is approved, then consumers in California could face less choice and confusing information at their food markets despite claims that Prop 37 would result in more choice and better information.

Choice will be reduced for processed foods with corn, soy, and canola ingredients, and prices of these and other

processed foods will increase overall. The effects will vary by product and food company but the following three general effects can be expected:

- Certified non-GM processed food products will virtually disappear from food stores,
- Organic food will gain market share,
- Food labels will be confusing for consumers: GM labeled products could have very low traces of GM, while organic products might contain accidental traces of GM ingredients but not be labeled as such.

Background on Genetically Modified Crops

The genetic modification of plants has gone on for hundreds of years. Scientific varietal selection and crossing of most grains has genetically modified them numerous times. Genetically modified, also called genetically engineered or transgenic crops, like Roundup Ready® soybeans, are developed by transferring genes from one organism to another. For instance, the Roundup-tolerant gene comes from a natural bacterium which is found in the soil.

Compared to traditional plant breeding, modern biotechnology can produce new varieties of plants more quickly and efficiently. In addition, biotechnology can introduce desirable traits into plants that could not be established through conventional breeding techniques. In many countries around the world, ongoing research will introduce genes into crops that will give plants resistance to herbicides, insects, disease, drought and salts in the soil, as well as increased nutrient efficiency.

GM crops were introduced on a commercial scale in the United States and elsewhere in the mid-1990s. In the U.S. commercially grown biotech crops include corn, soybeans, cotton, canola, sugarbeets, alfalfa, papaya, and squash. These first generation GM crops are characterized primarily by one or more of the following traits: disease resistance, pest resistance, and herbicide tolerance. Research is now focused on the second generation of biotech crops, expected to provide direct consumer nutritional and health benefits, such as healthier cooking oils.

The application of genetic engineering to food and agriculture is one of the most significant technological advances to impact modern agriculture, but there remains significant controversy surrounding the commercial production and marketing of biotech crops and the foods made from some of these crops. One issue is that some insects and plants are starting to develop resistance to the technology.

Around 90% of U.S. corn, soybeans and cotton varieties planted are now genetically engineered. At the present time in California, the only major GM crop under cultivation is cotton. The United States accounts for over 40% of bioengineered crops produced globally. Other major adopters of this technology include Argentina, Brazil, Canada, and India.

In a recent report, the Organization for Economic Co-operation and Development (OECD) in Paris and the Food and Agriculture Organization (FAO) of the United Nations (in Rome) called for increased agricultural production in order to meet a rising demand for food. They concluded that by 2050, agricultural production must increase globally by 60% and they pointed out that biotech crops will be necessary to meet this challenge.

Suggested Citation:

Carter, C.A., G.P. Gruère, P. McLaughlin and M. MacLachlan. 2012. "California's Proposition 37: Effects of Mandatory Labeling of GM Food." *ARE Update* 15(6): 3-8. University of California Giannini Foundation of Agricultural Economics.

Colin Carter is a professor in the Department of Agricultural and Resource Economics at UC Davis and director of the Giannini Foundation of Agricultural Economics. He can be reached at cacarter@ucdavis.edu. Guillaume P. Gruère received his Ph.D. from the ARE department at UC Davis. He was a Senior Research Fellow at the International Food Policy Research Institute and can be reached by email at ggruere@gmail.com. Patrick McLaughlin and Matthew MacLachlan are Ph.D. students in the ARE department at UC Davis. They can be contacted by e-mail at patrickm@primal.ucdavis.edu and matthewm@primal.ucdavis.edu, respectively.

For additional information, the authors recommend:

Carter, C.A., and G.P. Gruère. "Mandatory Labeling of Genetically Modified Foods: Does it Really Provide Consumer Choice?" *AgBioForum* 6, 1&2 (2003): 68-70. www.agbioforum.org/v6n12/v6n12a13-carter.htm.

Gruère, G.P., and S.R. Rao. "A Review of International Labeling Policies of Genetically Modified Food to Evaluate India's Proposed Rule." *AgBioForum* 10, 1 (2007): 51-64. <http://agbioforum.org/v10n1/v10n1a06-gruere.htm>.