Food Labeling: An Examination of Bioengineered Food Disclosures

Madison Dyment
200 Agricultural Administration Building
2120 Fyffe Road
Columbus, OH 43210
614-292-6909
dyment.5@ osu.edu

Joy Rumble
1680 Madison Avenue
119B Halterman Hall
Wooster, OH 44691
330-287-1368
rumble.6@osu.edu

Brandon McFadden
224 Townsend Hall
Newark, DE 19716
302-831-1876
foodecon@udel.edu

Introduction

The safety of foods containing genetically modified ingredients has been a prominent and controversial topic for many years (Nelson, 2001; Yang & Chen, 2015). However, the term GMO is no longer representative of all possible modifications due to advancements in technological precision (U.S. Food & Drug Administration, n.d.). The term "bioengineered" is now more accurate and has replaced GMO as part of the new labeling standard by the U.S. Department of Agriculture, which took effect in January of 2022. All products containing a detectable bioengineered (BE) ingredient must be labeled using one of four options: text, symbol, electronic or digital link, and/or text message (USDA, n.d.). Food packaging and labeling holds a great deal of influence in attracting attention and informing purchasing decisions (Opperud, 2004; Ares et al., 2011) and it is unknown how the new labeling requirements may be impacting purchases. Furthermore, it is unknown how the labeling disclosure options are being implemented by food manufacturers. Analyzing the prevalence of each disclosure option provides insight into marketing goals, policy implementation, and consumer response. The purpose of this study was to determine the prevalence of each BE disclosure option among different food categories, contributing to AAAE Research Priority Area 2 (Roberts et al., 2016).

Theoretical Framework

There are numerous factors that go into marketing and design of products, including semiotics. Semiotic theory describes the relationships between signs and the intended meanings, interpretations, and impressions they invoke (Ares et al., 2011; Barthes, 1967). Semiotis details differences between signs, including linguistic signs and symbols, that relate to different labeling choices. When looking at why certain disclosure options are used, semiotics is a logical avenue through which to understand why specific methods are used more often than others and what impact these different symbols may have on overall brand success and purchasing decisions of the consumer.

Methods

To understand BE labeling disclosure implementation, a visual and descriptive analysis was used. Studies by Branquinho et al. (2009) and Kalaitzandonakes et al. (2018) informed the selection of 10 food categories which commonly contain BE ingredients (cereals, chips, convenient meals, cookies, ice cream, infant formulas, pop/soda, salad dressing, soup, and soy products). Researchers selected five products from various brands for each category, with 50 products total, and photographed the packaging and disclosure option used at a regional grocery store chain in Ohio. Disclosure results were recorded and analyzed for descriptive statistics. A "Non-GMO" disclosure option was added during analysis, given the prevalence among two of the categories examined.

Results

The BE text disclosure was the most prevalent (n = 24) disclosure option across brands and products examined. Notably, only two products opted to use the symbol disclosure and no product used a text message or phone call option. For pop beverages, only Coke products used disclosures. Infant formulas and most soy products did not contain BE ingredients and displayed the non-GMO label. Table 1 provides the disclosures by product type and Figure 1 provides a sample of the varying disclosure options observed.

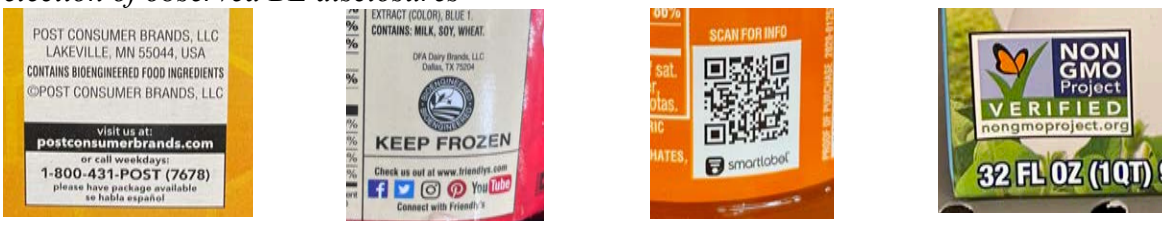
Table 1

Frequency of BE disclosure type among product categories

	Text	Symbol	Electronic/Digital Link	Text Message/Phone	Non-GMO
Cereal	4	0	1	0	0
Chips	3	0	2	0	0
Convenient Meals	3	0	2	0	0
Cookies	5	0	0	0	0
Ice Cream	3	1	1	0	0
Infant Formulas	0	0	0	0	5
Pop	0	0	5	0	0
Salad Dressing	2	0	3	0	0
Soup	4	0	1	0	0
Soy Products	0	1	0	0	4
Total	24(48%)	2(4%)	15(30%)	0%	9(18%)

Figure 1

Selection of observed BE disclosures



Note. Products from left to right: Post Honey Combs with text disclosure, Friendly's Ice Cream with symbol disclosure, Fanta with digital link disclosure, WestSoy Soymilk with Non GMO label

Discussion and Recommendations

Results show that almost half of products observed were using the BE text disclosure, reducing the role of semiotics in label processing and product selection (Barthes, 1967). Only two products utilized the USDA developed BE symbol. Interestingly, both products used the black and white symbol option, rather than the color option. More research should be done to understand the semiotics associated with the BE symbol, in both color variations. Nearly a third of products used the digital link, which provides no indication of BE ingredients unless scanned by the consumer. The lack of disclosure among all pop brands may point to a difference in ingredients used or policy compliance. Regardless, the inconsistency of disclosure among pop brands may create consumer dissonance. Furthermore, the high frequency of Non-GMO labels among infant formulas and soy-based products may create dissonance when consumers see a BE label on other products, as the more accurate BE term has not been adopted by labels not including these modified ingredients. This study highlights the needs for practitioners to evaluate labeling choices and policy implications. Further research should be done to understand consumer perception and understanding of these disclosure's as well as the disclosure impact on purchasing. These understandings are vital to measuring policy impacts and communicating about complex food and technological advances (Ruth et al., 2018).

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