Council for Agricultural Science and Technology
Kent G. Schescke
Executive Vice President
2015
The CAST Mission

CAST assembles, interprets, and communicates unbiased, credible, science-based information

- Regionally, nationally, and internationally
- To: Legislators, regulators, policymakers, the media, and the public

“...what CAST does is very important to mankind.” --Dr Norman E. Borlaug
What Does CAST Do?

• CAST disseminates science-based information through:
  - print materials
  - online sources
  - videos on website, YouTube, and SchoolTube
How Does CAST Do This?

...with the help of many volunteer contributors:

- CAST has **50 Board Members** representing scientific societies, companies, nonprofits, and universities.

- There are **70 active task force members** working on writing and/or reviewing CAST reports yet to be released.

- CAST uses volunteer scientific experts as authors and reviewers. **More than 300 volunteers** since 2007
  - 65% academia
  - 15% government
  - 15% private companies
  - 5% nonprofits
Primary CAST Objectives

• Publishing task force reports, commentaries, and issue papers written and peer-reviewed by scientists from many disciplines

• Distributing CAST publications widely to nonscientists to enhance the education and understanding of the general public

The Science Source for Food, Agricultural, and Environmental Issues

Impact of the Precautionary Principle on Feeding Current and Future Generations

ABSTRACT

After a research-based analysis of the peer-reviewed literature, the authors of this CAST Issue Paper conclude that the precautionary principle (PP) is not an inherently or intentionally prescriptive policy, nor is it a negative or precautionary strategy. Rather, the PP is a principle that provides a framework for decision-making in the face of uncertainty, when there is insufficient or conflicting evidence to support a scientifically-based decision. The PP is intended to ensure that decisions are made in the best interest of public health and safety.

The authors argue that the PP is a valuable tool for addressing complex and emerging issues, such as those related to food safety and environmental protection. They also discuss the importance of stakeholder engagement and public participation in the decision-making process, and the need for clear communication of scientific information to the public.

CAST Issue Paper Number 52
June 2013

The Goldilocks Strategy may be the most appropriate when striving for a balanced and deliberate approach to precaution. (Photo from Shutterstock.)
Friday Notes

- Published 48 times each year
- Lead articles on current topics being discussed in agriculture
- More than 60 current agricultural news items selected from 100+ sources, including *live links* to the original articles
- Plus an international section
CAST expands its outreach through the active use of social media.
Visit CAST Online

www.cast-science.org

Free access to all material for anyone having a “.gov” address

The map to the left depicts visits to the CAST website from every U.S. state and 181 countries.
Newest CAST Initiative

Ag quickCAST Publications

• 1-page with live links to content in original documents

• Available free on the CAST website

• Printable for distribution as handouts

The Contributions of Pesticides to Pest Management in Meeting the Global Need for Food Production by 2050

For thousands of years, farmers used alternative non-chemical methods for weed control. The benefits of herbicides are now understood by comparing their practicality, cost, effectiveness, and reliability to hand weeding and cultivation.

Insect pests have been controlled for centuries by using chemical pesticides. The levels of control achieved by alternative practices are inferior to the control from herbicides.

The use of herbicides has facilitated the adoption of several important agronomic practices and has impacted on all phases of crop production.

Pesticides are the backbone of crop protection in developing countries. Lower crop yields in developing countries are due in large part to uncontrolled pests.

Pesticide research in developing countries shows great potential to increase yields.

Pesticide use in developing countries has a very favorable cost/benefit ratio.

Pesticide use in developing countries will promote use of other sustainable practices.

To view the complete text of the CAST Issue Paper, click here or visit the CAST website (www.casteonline.org) and click on Publications. For more information about CAST, visit the website or contact Linda Dumont, Executive Vice President, at 703-260-2123 ext. 201.
Sun...Earth...Water...Mankind.
In synergy with science and technology to create a sustainable world supported by plants and animals.
Presented by
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Acknowledgements

CAST Staff
- Kent Schescke - Executive Vice President (current)
- Linda Chimenti - Executive Vice President (past)
- Carol Gostele - Managing Scientific Editor
- Melissa Sly - Director of Council Operations

University of Delaware
- Mackenzie Peet

Funding support for some of the research profiled in the CAST Issue Paper
Outline of today’s talk

- Invited to write a CAST Issue Paper about how food labeling influences the willingness of consumers to accept technology

- Review the peer-reviewed literature on consumer behavior and the legal background of food labeling

- Offer policy recommendations about how to move forward on this important issue
“You are what you eat” speaks to the intimate connection between individuals’ food choices and their health—and even their personal identity.

Yet most consumers rarely grow their own food, which means that what people “are” is generally beyond their control.
Consumers cannot directly observe the production processes that created the food they eat.

Consumers can find it difficult to align food choices with their preferences.

This situation is what economists refer to as symmetric information.

- This situation is ripe for mistrust.

Consumers want more information about their food.

- Marketers are responding to this consumer demand.

Consumers associate process labels to differences in product quality, but also to other ethical, social, and environmental consequences of food production.
Food companies are using labels to communicate specific production processes.

Note that process labels have a long history:
Examples of Process Labels

<table>
<thead>
<tr>
<th>SINGLE PRACTICE</th>
<th>SET OF PRACTICES</th>
</tr>
</thead>
<tbody>
<tr>
<td>✓ Antibiotic Free</td>
<td>✓ American Humane Certified</td>
</tr>
<tr>
<td>✓ Cage-free Eggs</td>
<td>✓ Animal Welfare Approved</td>
</tr>
<tr>
<td>✓ Dolphin-safe Tuna</td>
<td>✓ Bird Friendly</td>
</tr>
<tr>
<td>✓ “Contains/Free of” Genetically Engineered Product (GMO)</td>
<td>✓ Certified Humane</td>
</tr>
<tr>
<td>✓ Pasture-raised Eggs</td>
<td>✓ Fair Trade</td>
</tr>
<tr>
<td>✓ Radura</td>
<td>✓ Free Range</td>
</tr>
<tr>
<td>✓ rbST-free Milk</td>
<td>✓ Halal</td>
</tr>
<tr>
<td>✓ Shade-grown Coffee</td>
<td>✓ Humanely Raised</td>
</tr>
<tr>
<td>✓ Vine-ripened Tomatoes</td>
<td>✓ Kosher</td>
</tr>
<tr>
<td></td>
<td>✓ Organic</td>
</tr>
<tr>
<td></td>
<td>✓ Rainforest Alliance Certified</td>
</tr>
<tr>
<td></td>
<td>✓ Salmon Safe</td>
</tr>
<tr>
<td></td>
<td>✓ Sustainably Produced</td>
</tr>
</tbody>
</table>

Note: Our CAST paper is not about labeling of ingredients, calories, or nutritional content. These labels are about the composition of the food, not the process.
Inherent in this legislation is the tension between principles of “consumer right to know” and “consumer need to know,” as well as the pragmatic, business-oriented aspects of putting such labeling initiatives into practice.

At least five states have enacted legislation or attempted to regulate claims on food products that are free of rbST, including Indiana, Kansas, Missouri, Ohio, and Pennsylvania.

At least 26 states have proposed labeling legislation for foods containing genetically modified (GM) organisms.

- Those interested in this subject should refer to CAST Issue Paper 54, titled “The Potential Impacts of Mandatory Labeling for Genetically Engineered Food in the United States.”

For instance, in 2014 Vermont required manufacturers to label food if it contained GMOs.
There are numerous federal and state laws requiring the labeling of food products, including the following:

1. Federal Meat Inspection Act (U.S. Congress 2006)
2. Poultry Products Inspection Act (U.S. Congress 2006)
3. Egg Products Inspection Act (U.S. Congress 2006)
5. Fair Packaging and Labeling Act (U.S. Congress 2006)

These labeling requirements are intended to:
- Inform consumers about what they are purchasing,
- Prevent consumer deception,
- Assist consumers in making value comparisons between goods, and
- Prevent injury to the public’s health from the sale of misbranded foods.
Benefits of Labels

- When labeling empowers people with knowledge and better-informed quality expectations, it has a number of benefits.

- Under appropriate third-party or governmental oversight, process labels can accomplish the following:
  1. Effectively bridge the informational gap between producers and consumers.
  2. Satisfy consumer demand for broader and more stringent quality assurance criteria.
  3. Create value for both consumers and producers.
  4. Help remove ingredients from the food we eat that have been scientifically proven to be harmful.
A fundamental problem with process labels is that they often still relate to “credence” characteristics and are subject to consumers’ interpretation.

Consider “organic” food.
- How can consumers verify that organic food is making them healthier?

Consider the “low food miles” label
- “Low food miles” tomatoes could be grown in energy-intensive greenhouses.
- Consumers may end up paying a premium to obtain the opposite environmental impact they want.

Consider the “natural” label.
- According to a 2014 Consumer Reports study of 1,000 people, 2/3 believe that the term means the food had no artificial ingredients, pesticides, or genetically modified organisms (GMOs)
- To date, the FDA has no formal policy defining the term natural when used on food labels.
Kanter, Messer, and Kaiser (2009) show that process labels can stigmatize conventionally produced products.

This is particularly problematic when there is no scientific evidence that food produced in this manner causes harm – or even that it is compositionally any different.

Thus, labeling the benefits for a new product can cast the conventionally produced product in a negative light.
Neophobia, the aversion to new foods, is engrained in human instincts.

Thus process labels communicating the use of a specific technology—generally new and unknown to consumers—will usually induce an instinctive, negative reaction.

For example, Costanigro and Lusk (2014) show that a process label communicating that a fruit was “ethylene ripened” induced a negative response on par with the aversion manifested toward GE products.
- However, ethylene is a natural-occurring hormone and it’s equivalent to setting a banana in a fruit bowl to promote ripening.

Media tends to focus on negative issues. And consumers tend to weight bad news more heavily than good news.
Consider irradiation of food.

There have been many scientific studies on the impact of irradiation of food on human health.

The general scientific consensus is that there are no significant negative health effects.

The FDA and USDA have approved the use ionizing radiation for:
- Spices and dried vegetable seasoning (1983),
- Pork (1985),
- Fresh fruit and vegetables (1986),
- Poultry meat (1990),
- Ground beef (1997),
- Shell egg (2000),
- Sprouting seed (2000), and
Potential Negative Consequences

1. Increasing food prices
   - For example, the need to develop separate food processing systems

2. Stunting scientific and technological advances in agriculture

   - These consequences would likely impact the poor in the U.S. and the rest of the world the most.

   - Science and technology have been critical in feeding the extra 6 billion people who have been added to the world in the past 165 years.
     - The percentage of people who live with inadequate food supplies has declined.
     - Production of food staples has significantly increased globally without a significant growth in the number of acres under cultivation.
     - Currently, the average U.S. household spends only 11% of its income on food compared to 42% in 1900.
Policy Recommendation #1

Mandatory labeling should only occur in situations in which the product has been scientifically demonstrated to harm human health.

- A recent study by the Pew Research Center, done in cooperation with the American Association for the Advancement of Science, revealed that 88% of scientists think genetically modified foods are safe. Yet only 37% of the public agrees.

- Alston and Sumner (2012) cite public opinions showing that, although the majority of the California public voted against mandatory labeling, 85% would refuse to buy products if they knew those products were produced with GE ingredients.

- Hence, mandatory labels could act as a pseudo ban on products produced with genetic engineering and other production practices not viewed positively by the public.
Governments should avoid imposing bans on process labels.

- Banning labels undermines consumer trust in the agricultural sector.

- In 2008, the PA Department of Agriculture proposed a new rule that would have prohibited labeling indicating that a dairy product was rbST free or free of hormones. The department maintained that such claims were misleading and impossible to prove.
  - After significant backlash, however, they rescinded the law in February 2009.

- Ohio attempted to enact a law aimed at banning the labeling of dairy products as “rbST free.” The Sixth Circuit Court of Appeals, however, struck down the law in 2010 (International Dairy Foods Ass’n v. Boggs 2010).
In the case of voluntary labels, some conditions need to be required to avoid causing false implications related to competing products.

- The labeling claims must be true and scientifically verifiable.
- Process labels claiming a product “contains” or is “free of” a certain production-related process should also include labels on the package stating the current scientific consensus regarding the importance of this attribute.
Policy Recommendations: Summary

1. Mandatory labeling should only occur in situations in which the product has been scientifically demonstrated to harm human health.

2. Governments should avoid imposing bans on process labels.

3. In the case of voluntary labels, some conditions need to be required to avoid causing false implications related to competing products.
   A. The labeling claims must be true and scientifically verifiable.
   
   B. Process labels claiming a product “contains” or is “free of” a certain production-related process should also include labels on the package stating the current scientific consensus regarding the importance of this attribute.
Producers and policymakers need to be more imaginative about next-generation process labels.

For example, combining smartphone technology and quick response (QR) codes on food products could provide consumers with valuable information.

Moving away from simple all-or-nothing labels would help because they rarely tell an accurate story.
- For example, instead of coffee being either labeled as “bird friendly” or not, it could be given a 1–10 score on its environmental impact as determined by a third-party scientific assessment.
- For example, the Leadership in Energy and Environmental Design (LEED) certification uses four levels for construction.
Questions/Discussion

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For a free download of Issue Paper 56, visit the CAST website:  
www.cast-science.org

CAST Issue Paper  
Process Labeling of Food: Consumer Behavior, the Agricultural Sector, and Policy Recommendations

ABSTRACT

Consumers are increasingly exposed to labels communicating specific processing aspects of food production, such as Certified Organic, Fair Trade, and Free of Genetically Modified Organisms. At the root of this phenomenon is the desire for individual control as well as diffuse distrust in the safety and health of the food produced by modern agriculture. These decisions are made with concerns about the ethical, social, and environmental consequences of food production. Under appropriate third-party or governmental oversight, process labels can effectively bridge the informational gap between producers and consumers, but such labeling often has serious unintended consequences. (Background image from OrangeShutterstock; Foreground image from MatthewCoyle/Shutterstock; Adapted)

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