Food Waste and the Issue of Product Date Labeling: Looking into the Future

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IFT feeding the minds that feed the world

Key Points

- Food waste is a substantial, global issue
- Date labeling of food contributes to food waste
- Scientific advances and technological innovations are important to reduce waste, solve future global food challenges
- Collaborative action is needed to move toward uniformity in date labeling, and a workable solution to stakeholder challenges

Food Waste

- *"An important part of food loss… the discarding or alternative (non-food) use of food that was fit for human consumption—by choice or after the food has been left to spoil or expire as a result of negligence."*

- Food loss is *"the decrease in quantity or quality of food" "… the agricultural or fisheries products intended for human consumption that are ultimately not eaten by people or that have incurred a reduction in quality reflected in their nutritional value, economic value or food safety."*

FAO (2014a)

Why the Concern?

- Projected population increase from 7.2 billion to 9.6 billion by 2050 and 10.9 billion by 2100
- Hunger: approximately 800 million people
- Hidden hunger (micronutrient deficiencies): additional 1 billion people
- Malnutrition: single largest contributor to disease, possible cost to economy of up to 5% of global income
- Significance of global food wastage footprint
- Climate change
- Limited resources

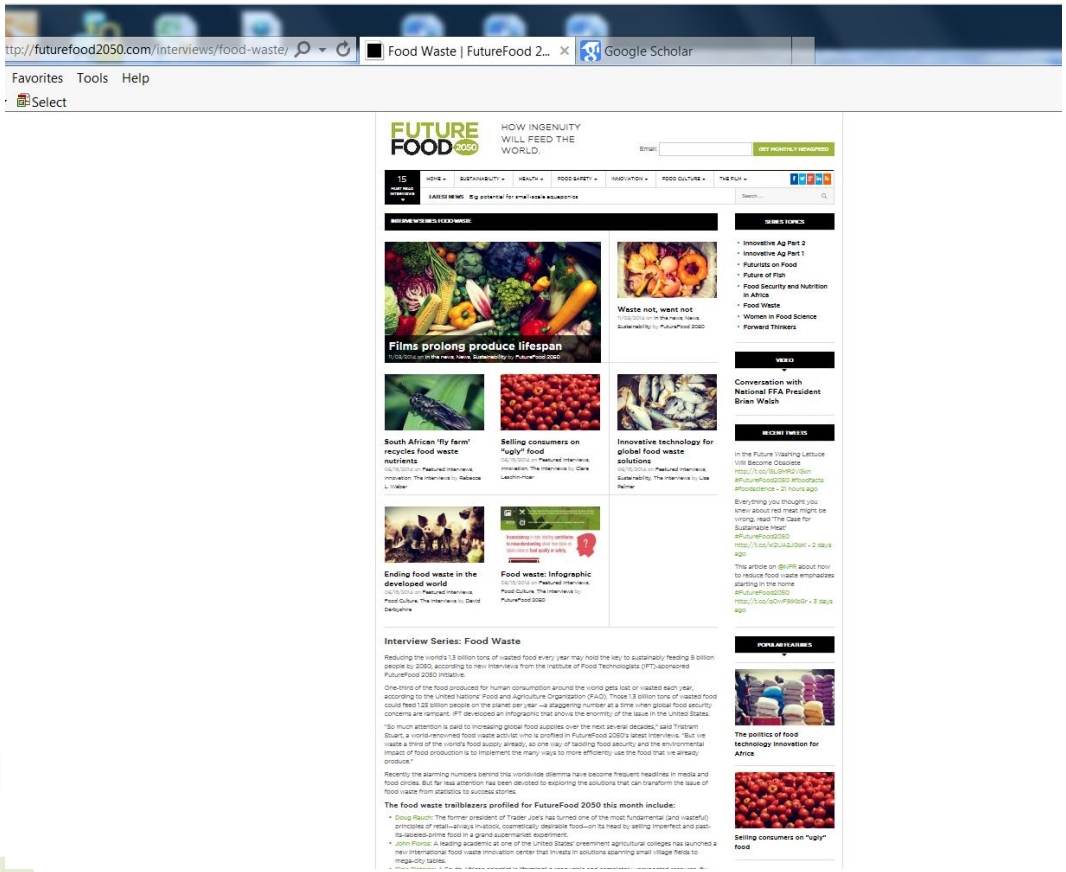
FAO (2013a,b, 2014a,b,c), FAO/IFAD/WFP (2014, 2015), UN (2013)

Food Loss and Waste

- Substantial
  - 33 to 50% of food, on a global scale, equivalent to
    - 1.3 billion tons/year of food
    - $1 trillion dollars in value, annually
- Food system-wide; causes vary
  - Developing countries: >40% losses occur at postharvest and processing levels
  - Industrialized countries: >40% of losses occur at retail and consumer levels
- Nonproductive use of natural resources
  - land, water, energy, other inputs
- Negative impacts on food security, economic development, environment
  - greenhouse gas emissions

FAO (2011, 2013a,b, 2014a), FAO/WHO (2014), Foresight (2011)

FutureFood2050
Food Waste Feature

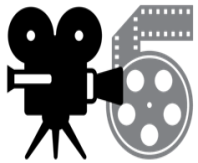


FutureFood2050.com, Institute of Food Technologists

FUTUREFOOD 2050

75 Stories/Interviews

Documentary



Food Date Labeling


Comprehensive REVIEWS in Food Science and Food Safety

Applications and Perceptions of Date Labeling of Food

Rosetta Newsome, Chris G. Balestrini, Mitzi D. Baum, Joseph Corby, William Fisher, Kaarin Goodburn, Theodore P. Labuza, Gale Prince, Hillary S. Thesmar, and Frank Yiannas

Abstract: Open dating of food products has been practiced for decades, and has been key to achieving stock rotation at retail and providing information to consumers. The open date provides a simple communication tool, which may be based on product quality and/or food safety as determined by the manufacturer or retailer. Date marking is generally open but it can be closed (code intended for managing product at retail, and for recall and traceability), and the terminology and applications vary widely around the world. The variation in date labeling terms and uses contributes to substantial misunderstanding by industry and consumers and leads to significant unnecessary food loss and waste, misapplication of limited resources, unnecessary financial burden for the consumer and the food industry, and may also lead to potential food safety risk in regards to perishable foods. A "use by" or similar date cannot be relied on to indicate or guarantee food safety because absolute temperature control of food products throughout the food supply chain cannot be assured. This paper provides an introduction to the issue of food product date labeling and addresses its history in the United States, different terms used and various practices, U.S. and international frameworks, quality compared with safety, adverse impacts of misconceptions about date labeling, and advantages of technological innovations. Collaboration to develop a simple workable solution to address the challenges faced by stakeholders would have tremendous benefit. Conclusions include a call to action to move toward uniformity in date labeling, thereby decreasing confusion among stakeholders and reducing food waste.

Keywords: code dating, date labeling, date marking, open dating

Introduction

Date labeling of foods has been practiced and studied in countries around the world for decades, and many activities and developments have occurred since the 1970s (GMA 1979; IFT 1981; Labuza and Seyhun 1999a; NACMCF 2002, 2005; ERG 2003;

tributes to substantial misunderstanding in the marketplace with regard to how the dates relate to food quality or safety. This misunderstanding leads to unnecessary food loss and waste, misapplication of limited resources, and unnecessary financial burden on the food industry and consumers alike. The misunderstanding can

- Authors
  - Academia
    - Theodore P. Labuza, University of Minnesota
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    - Chris Balestrini, Grocery Manufacturers Association
    - Hilary Thesmar, Food Marketing Institute
    - Frank Yiannas, Walmart
  - Regulatory Community
    - Joseph Corby, Association of Food and Drug Officials
  - Other Sectors
    - Mitzi Baum, Feeding America
    - Kaarin Goodburn, Chilled Food Association
    - Gale Prince, SAGE Food Safety
  - IFT
    - Rosetta Newsome, William Fisher

Newsome and others (2014)

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- Content highlights
  - U.S. history
  - Terminology, applications
  - Different regulatory frameworks, perspectives among countries
  - Food quality vs. safety
  - Consumer perception
  - Food loss and waste
    - Extent of issue, waste reduction efforts, initiatives
  - Date labeling challenges
  - Advantages of technological innovations
  - Conclusions, Call to Action

Newsome and others (2014)

U.S. Date Labeling History

1900s

- First dates on packaged foods

1960s

- Sell-by dates on milk

1970s

- Supermarkets implement open date labeling
- Legislation introduced
- U.S. General Accounting Office report, Office of Technology Assessment analysis
- Consumer surveys
- New York State Consumer Protection Board published report to aid consumer understanding
- Joint labeling hearings: Food & Drug Administration, U.S. Dept. of Agriculture, Federal Trade Commission

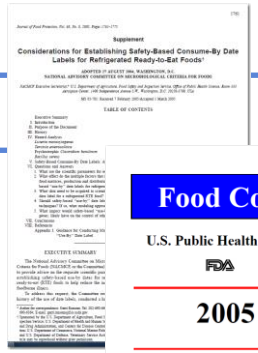
U.S. Date Labeling History

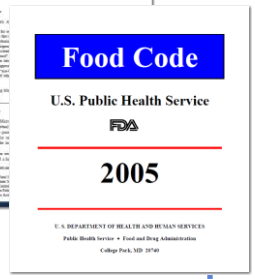
1980s

- National Conference on Weights and Measures – AFDO collaborate on Open Dating Regulation

1990s

- Additional legislative activity


Considerations for Establishing Safety-Based Consume-By Date Labels for Refrigerated Ready-to-Eat Foods



2000s

- FDA-commissioned study, by ERG
- Grocery Manufacturers Association – Food Marketing Institute project, report by Raftery Resource Network
- National Advisory Committee on Microbiological Criteria for Foods study
- FDA Food Code update
- Consumer studies, surveys
- Natural Resources Defense Council – Harvard Food Law & Policy Clinic reports

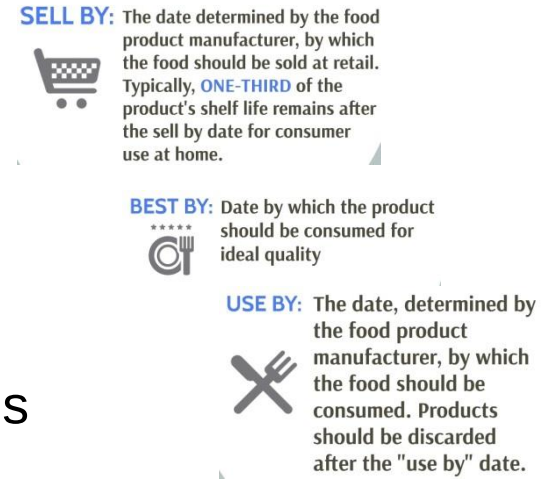
Inconsistency in Date Labeling

- Outside the United States
  - Regulatory frameworks differ; may be based on health, nutrition, quality, food safety
    - Australia, New Zealand:
      - best-before (quality-related) or use-by (safety-based) date required for most packaged foods with < 2-year shelf life, for retail sale or catering, with some exceptions
    - Canada:
      - Durable-life date with “best before” and “meilleur avant” for prepackaged foods with ≤ 90 d durable life not packaged at retail
      - Packaging date with “packaged on” and “empaqueté le” and durable life on prepackaged foods with ≤ 90 d durable life packaged at retail, with exceptions
      - Expiration date on formulated liquid diets, food for use in very low-energy diets, meal replacements, nutritional supplements, human milk substitutes
    - EU:
      - Date of minimum durability and best before, or, for microbiologically highly perishable foods, a use-by date required, with exceptions
      - the “food shall be deemed unsafe” after the use-by date, with some exceptions
    - UK: an offence to sell food after its use-by date

CFIA (2014), EC (2011), FSA/DEFRA (2011), Minister of Justice (2014), Newsome and others (2014), NRDC (2013)

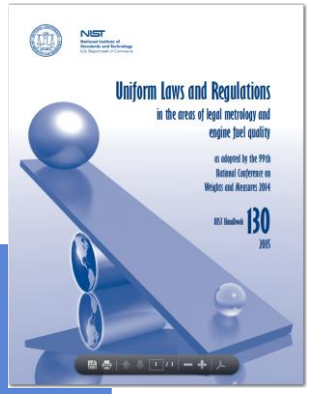
Inconsistency in Date Labeling

- In the United States
  - Limited federal requirements
  - Variation among the states, jurisdictions
  - Multiple regulatory jurisdictions
  - Local jurisdictions may differ from the states



GMA and others (2008), Newsome and others (2014), NIST (2013), NRDC (2013)

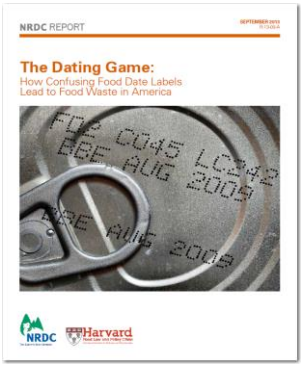
State Regulations

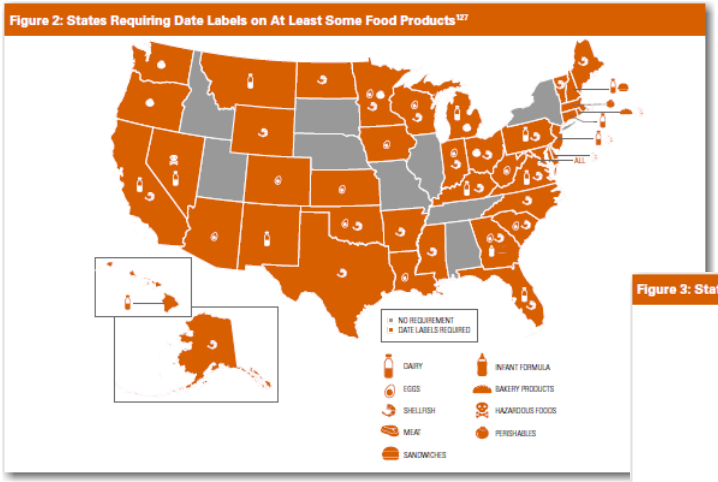


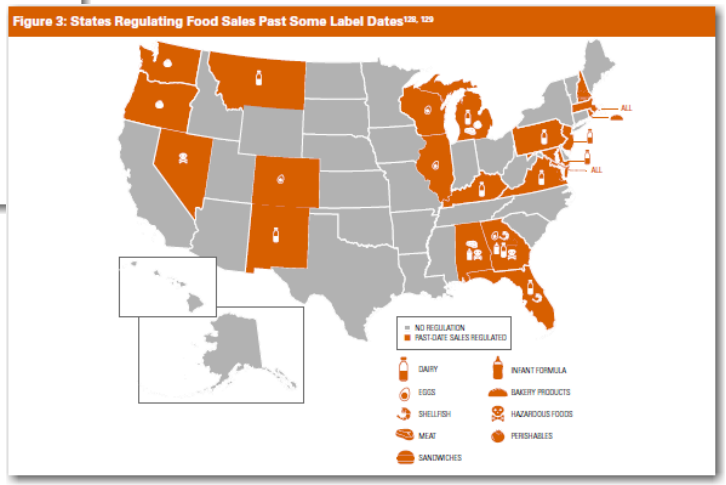
Status of Adoption of Uniform Open Dating Regulation, 2013, 2015	Number of States
Adopted, updated annually	5
Law or regulation in force, based on NCWM standard, but earlier year	4
Law or regulation in force, but not based on NCWM standard	10
No law or regulation	31
No law or regulation, but NCWM standard used as guideline	3

NIST (2013, 2015)

State Regulations







With permission, NRDC, Natural Resources Defense Council (2013). www.nrdc.org/org/food/files/dating-game-report.pdf.

Adverse Impacts of Varying Food Date Labeling Practices, Misunderstanding

- Consumer confusion
  - Lack of adherence to use-by dates, ineffective refrigerated storage
  - Potential food safety risk, regarding perishable foods
- Food waste
  - Unnecessary discarding of food
- Misapplication of limited resources
- Unnecessary financial burden for consumers, industry

Boxstael and others (2014), Cates and others (2004), Evans and Redmond (2014), Kosa and others (2007), FMI (2007, 2008, 2009), Labuza and Szybist (1999), Labuza and others (2001), NRDC (2012), Sherlock and Labuza (1992), WRAP (2008, 2010, 2012, 2013)

Food Date Labeling Challenges

- Using “close-to-code” products at food banks
- Costs at wholesale and retail to check dates and re-rotate products
- Limited regulatory inspection resources for checking dates at retail
- Fines or criminal prosecution, in some situations, for noncompliance

Labuza and Szybist (2001), LBRO (2011a, b)

Use of Technological Innovations

- Intelligent/Smart Packaging
  - Data Carriers (e.g., bar codes, radiofrequency identification)
  - Packaging Indicators (e.g., time – temperature indicators)

Labuza (1996, 2000), Taoukis and others (1991), Yam and others (2005)

Advantages of Packaging Indicators

- Monitor temperature
- Provide real-time data feedback about quality, safety, shelf life
- Improve inventory management
- Enhance traceability, Hazard Analysis and Critical Control Points food safety management
- Allow change from first-in first-out concept to least-shelf-life-left first-out distribution, logistics management concept
- Reduce waste

Diez-Gonzalez and others (2007), Labuza (1996), Labuza and Szybist (1999), Pal and others (2007), Taoukis and others (1991), Yam and others (2005)

Summary, Call to Action

- Collaboration to develop a simple workable solution to address stakeholder challenges would be beneficial
  - Align to establish date labeling uniformity
    - To develop a more consistent or single best practices date-marking system that takes into consideration on-package storage instructions
  - Reexamine regulatory enforcement
    - Regulatory agencies should revisit the emphasis placed on the issue of food date labeling at retail and, where appropriate, shift excessive resources placed on food quality date labeling to more significant health and safety risks.
    - Coordination of federal and state approaches to date labeling, while allowing for collaborative industry-led development of a solution to achieve uniformity, would increase consistency across labels and decrease confusion, including at the regulatory level.

Newsome and others (2014)

Call to Action, continued

- Educate consumers
  - Providing clear, simple consumer direction on food quality and safety and the meaning of date labeling would improve food waste behavior.
- Conduct more research on indicator technologies
  - Additional research to evaluate and further develop indicator technologies, such as time – temperature monitoring devices, and implement other improvements along the supply chain to monitor temperature, handling, and storage information could help better gauge true shelf life and reduce food waste, especially that of fresh produce.

Newsome and others (2014)

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