Food Researched: Apples
Focus of Research: Pesticides
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Title
The Environmental and Economic Effects of the Burgeoning Organic Industry

Objective(s)
“An apple a day” is far more than a conventional saying; American consumers continue to designate apples as their produce of choice, feeding into a multifaceted, billion dollar industry. This paper will first analyze the differences in pesticide use in conventional and organic apples. The second half of the paper reflects on the growing influence apples, in particular, have in the organic debate. Influenced by the increasingly branded retail industry, choosing organic or conventional largely reflects the intrinsic relationship between buying habits and the political, economical and societal repercussions.

Summary of Findings
Pesticide Use in the Apple Industry: The Conventional and Organic Approach

Introduction
The use of pesticides in the produce industry can be attributed to the producer desire to maintain a cost-effective and high-yield farming enterprise. Originally spurred by technological advances that allowed for more efficient and cost-effective pest and weed management, the conventional sector of apple production soared. However, recent attention from the media and experts has raised major concerns over the United States’ priorities of increasing output in lieu of consumer health and environmental sustainability. In response to these growing concerns, the organic market has become a major force in the apple industry.

While there are clearly major differences between the conventional and organic apple industries that polarize consumer priorities, there are numerous misconceptions that resulted from false media claims and a lack of clear information. As James McWilliams states in an interview, “we draw these bright lines between organic and conventional food, but science doesn’t draw those lines.”¹ For instance, there is no significant difference in nutrient values in a conventional apple versus an organic apple.² In addition, a common misconception over organic produce is that it is grown without pesticides. However, without the use of pesticides, organic and conventional producers would be unable to produce the relatively perfect, blemish-free apple

¹ Jeffrey Kluger, “What’s So Great About Organic Food?,” Time 176.9(2010):30-40
² Kluger
that consumers expect. The following sections detail the use of pesticides in production, and the respective effects that pesticides have on a producer and consumer level.

Conventionally Raised Apples:

Conventionally raised apples have faced increasing scrutiny regarding their health and environmental impacts. While the government is responsible for regulating the use of and appropriate levels for synthetic pesticides, the legitimacy and efficacy of these guidelines continues to be questioned. In an annual report published by the Environmental Working Group named “The Dirty Dozen,” apples are considered the foremost fruit to buy organic. The statistic is based on the startling finding that ninety-eight percent of conventional apples were found to have pesticides on them.³ Rightly, the media attention conventional apples have been receiving, such as this, has the power to drastically change consumer behavior. To combat a growing fear of buying conventional apples, and potentially deterring consumers from eating fresh fruit, experts are speaking out against such broad-sweeping statements. The US Apple Association made the following statement in response to the release of the 2011 Dirty Dozen List:

"Of the over 700 apple-samples that were tested by the USDA, the vast majority fell well below EPA approved safety levels. ... The 'list' does not pay attention to the actual levels of residues in the various foods which are within those tolerance (safe) levels, but simply states that residues were detected."⁴

The argument against pesticides becomes even more entangled in politics after a statement made in the President’s Cancer Panel 2008-2009 report. The report recommended that consumers “reduce their environmental cancer risk by choosing, ‘to the extent possible, food grown without pesticides or chemical fertilizers and washing conventionally grown produce to remove residues.’”⁵ This recommendation was made after studies in 2007 found that carcinogenic pesticides, such as those in the organophosphate family, were used on eighty-one percent of conventional apple acres.⁶ The effects of pesticide reports such as these are twofold: the publication of slanderous reports against pesticides on conventional apples deters the public from consuming this fruit, and it affects the economic future for the produce industry. In order to maintain the trust of American consumers, in addition to maintaining the integrity of health

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³ Marissa Cevallos. “Apples may top pesticides list, but everyone agrees on one point.” (Los Angeles Times Online, 14 June 2011)

⁴ Cevallos

⁵ ERS 3

⁶ ERS 14
standards, additional research is extremely important. As Marion Nestle eloquently states, “If there was a situation where more research was needed, this is it.”

Organic Apples:
The agricultural protocol for growing organic produce is summarized by the USDA as:

“Organic fruit and vegetable production relies on ecologically based practices, such as biological pest management and composting, and crops are produced on land that has had no prohibited substances applied to it for at least 3 years prior to harvest. Soil fertility and crop nutrients are managed through tillage and cultivation practices, crop rotations, and cover crops, supplemented with manure and crop waste material and allowed synthetic substances. Crop pests, weeds, and diseases are controlled through physical, mechanical, and biological control management methods.”

Therefore, organic farmers find alternative techniques to maintain the beauty and desirability of their produce. The Environmental Protection Agency reports that there are now 195 registered biopesticides, “substances derived from animals, plants or minerals that are toxic to certain species.” Biopesticides, such as pyrethrin, a natural compound made from the chrysanthemum plant, aid organic farmers in striking a balance between remaining more environmentally-friendly and remaining profitable. While organic pesticides limit the effects of weeds and pests, they do not eliminate them; organic apple yield were eighteen percent lower than conventional yields, due to the unfocused toxicity of conventional pesticides which kills all potential produce inhibitors.

The organic apple business doubled between 1997 and 2008, now accounting for five percent of the total acreage devoted to apple production. This surge in organic business reflects producer and consumer motivations. Producers recognize organics as a niche market; in addition to attracting a certain type of consumer, “growers received $0.55 per pound, on average, for organic apples, compared with $0.25 per pound for conventional apples.” These profit differentials reflect the price gap of organic versus conventional apples. However, growing organic comes with a price; as the organic industry becomes increasingly popular and corporatized, it is a price that small, family businesses increasingly cannot afford.

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7 Cevallos
9 Kluger
10 Interview with Fireside Orchard
11 ERS 11
12 ERS 6
13 ERS 22
The increased manufacturing costs of organic agriculture are due to higher labor costs and the incurred costs of the organic certification system.\textsuperscript{14} Implemented regulations require organic producers to pay an agency to cover the costs of inspections and “certifier activities.”\textsuperscript{15} In addition, organic farmers pay a surcharge for Federal Crop Insurance, and even with the surcharge, are unable to be covered using organic crop prices.\textsuperscript{16} With that said, there is strong evidence that farmers continue to be enticed by the advantages that organic farming entails. Of those that took a 2007 USDA Agricultural Resource Management Survey, forty-five percent of respondents specified that they chose organic practice to increase farm income, twenty-three percent cited the protection of family and community health, and nineteen percent claimed they wanted to engage in environmentally-friendly practices.\textsuperscript{17} Reflecting a significant priority in profit rather than a sole concern for the environment or consumer health, the organic market, as outlined in the Economic Repercussions of the Changing Apple Industry, is blossoming into a competitive and corporatized endeavor.

\textbf{21st Century Apple Industry: Consumer Identity, Desirability and Big Business}

The organic apple industry has surged to the forefront of consumer and media interests. Evolving from a small, natural-food store commodity to an accessible product, organic foods are sought after by consumers for a number of reasons. Evoking themes of health, sustainability and sophistication, buying organic products comes with a high price tag. As Figure 1 indicates, organic prices have consistently been higher than conventional prices. In fact, the USDA reports that “organic foods are typically more expensive… costing at least ten to thirty percent more.”\textsuperscript{18} Price versus willingness to pay values, however, do not appear to be a deterrent in the organic market’s primary consumer.

Studies indicate that consumers have very skewed perceptions of the appropriate price and wide-ranging benefits of organic food. Evidence of this can be seen in a study performed in 2008 which aimed to question the main determinates of buying organic, with questions probing participants’ opinions of the advantages and disadvantages of and associations with organic apples, in addition to the way buying organic apples made them feel. The study found significant differences in the beliefs of consumers intending to buy organic; those with intent thought organic apples: 1, had fewer chemicals; 2, were healthier; 3, produced in a manner better for the

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\textsuperscript{15} ERS 12  
\textsuperscript{16} ERS 12  
\textsuperscript{17} ERS 3  
\textsuperscript{18} EIB 5}
environment, and 4, were less expensive. Therefore, buying organic presents an opportunity for
the consumer to fulfill their moral, ethical and health standards. As Manny Howard describes,
“green markets can be a kind of food pornography”; while organic farming represents a more
sustainable and health-conscious approach to produce, it also lures consumers in, allowing them,
through their purchase, to attain a certain identity.

It did not take long for corporate institutions, such as Wal-Mart, to recognize the
profitability of organic branding. While they face the price barrier of appealing to all consumers,
organic products have begun to saturate the conventional retail, in addition to natural, retail
market; in 2009, fifty-four percent of organic sales were handled through mainstream grocers. In the US alone, “retail sales of organic foods grew from $3.6 billion in 1997 to almost $25 billion in 2009.” The commanding presence of businesses large and small has transformed the
industry. Large-scale packers are beginning to “own and operate their own orchards;” if this
vertical integration is successful at reducing overall costs, organic food could reach the budget-
conscious shoppers at Wal-Mart.

Economic and Political Repercussions of the Changing Apple Market

Apples play a crucial role in the continuity of the organic food industry, and are an
effective lens of viewing the progression of the organic industry as a whole. In addition, apples
represent an economic asset to the conventional and organic industries. The Economic Research
Committee reports that since 2007, organic produce has consistently been the top-selling organic
product.” Furthermore, the U.S. has been able to holster the success of the apple by trading
internationally. The United States Trade Commission reported that, in 2008, “the US held a $608
million trade surplus in apples and a position as the fourth-largest global apple exporter by
volume,” caused by increasing foreign disposable incomes. The aforementioned national and
international success of apples presents growers with the challenge of increasing supply, and the
government with regulating a thriving and highly desirable mode of commerce.

With a rapidly growing international population, resources are becoming increasingly
scarce and valuable. While the U.S. produces more calories that citizens should rightfully

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19 Moira Dean et. al.. *Moral Concerns and Consumer Choice of Fresh and Processed Organic Food*. Journal of
20 Kluger
24 EIB 6
25 USITC 1
consume, arable land use is nonetheless a concern. As James Williams, professor of environmental history, warns, “the back-to-the-land ideal of farming without the use of synthetic pesticides and other chemicals can take you only so far in a country with 309 billion mouths to feed… Industrial farms coax up to twice as much food out of every acre as organic farms.”

With that said, it is difficult to refute the claim that the organic movement has had beneficial effects on society as a whole. Health and environmental awareness and a thriving sector of the economy, the government must move to reward the work of organic farmers and producers, potentially following the example of European governments. European government policies encourage the adoption of organic farming techniques. Farmers are motivated by a number of schemes, including “green payment subsidies;” by providing economic support for farmers, the government is feeding a growing sector that produces massive social benefits.

Supporting the American economy by buying organic produce presents opportunities in local and large-scale agribusiness continuity. Reacting to the abounding success of the industry, the government has implemented regulations to control the misuse of the organic identity. The abounding opportunities the organic movement is experiencing have been Public pressure to organize a once scattered movement led to the implementation of national organic standards; these standards require that “farmers and processors with over $5,000 in annual sales of products labeled as organic must be certified by a USDA-accredited group.” The national regulation of organic branding prevents companies from profiting from false organic claims and adds inherent value to the cause. With legitimate certification in place, consumers have the choice of supporting local economies or opting to save money and support institutions such as Wal-Mart. While offering organic products at a lower, Wal-Mart style of pricing increases the likelihood of organic produce becoming an attainable product for all families, buying local will have the greatest benefit. As Jeffrey Kluger states, “It’s important too to support the local-farming movement not only to make more fresh foods available to more consumers but also to boost a growing economic sector and perhaps bring down prices as efficiencies of scale come up.”

While supporting small or large-scale manufacturers will support a fight against synthetic pesticides and environmental health, supporting local enterprises offers the largest opportunity for consumers to receive individual and societal benefits.

26 Kluger

27 EIB 12

28 ERS 13

29 Kluger
Appendix:

Figure One:

Figure 1
Price movement similar for organic and conventional apples

Average annual Fuji apple prices, San Francisco Terminal Market

Dollars per container

Fuj organic price
Fuj conventional price

2005 2006 2007 2008 2009 2010*

Average annual Gala apple prices, San Francisco Terminal Market

Dollars per container

Gala organic price
Gala conventional price

2007 2008 2009 2010*

Average annual Red Delicious prices, San Francisco Terminal Market

Dollars per container

Red Delicious organic price
Red Delicious conventional price

2005 2006 2007 2008 2009 2010*

*2010 estimate includes January-June prices.
1Cartons, tray pack, or case pack (approximately 40 pounds).
Sources


