

**A study of organic food consumers' knowledge, attitudes and
behavior regarding labor in organic farms**

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ABSTRACT

Buying organic is considered by consumers as a way to “vote with their dollar” and mitigate the environmental impacts associated with conventional agricultural systems. Although large scale certified organic farms that hire labor limit workers’ exposure to known harmful pesticides, low farm worker wages coupled with higher labor demands, seasonal hiring and limitations of access to health benefits still pose concerns that are not addressed through the organic certification process. In this study, I evaluated consumer knowledge and awareness of the current organic certification process, attitudes about buying organic, and frequency of and motives for purchasing organic foods. I surveyed consumers online and in two farmers’ markets in Northern California (San Francisco Ferry Plaza and Downtown Berkeley Farmers’ Market). Consumers’ lack of knowledge about organic certification standards suggests that their understanding of organics aligns with the popular public discourse reflecting organic products marketing strategies. Most participants value the inclusion of labor in organic certification standards, reasoning that people should be paid fairly for their labor. However, the study suggests that consumers do not necessarily purchase organics to support farm workers.

KEYWORDS

hired labor, organic food industry, certification standards, consumers’ perceptions, food labels

INTRODUCTION

In the 1960s and 1970s, environmentalists focused on the biophysical and human health effects of chemical fertilizers and pesticides, leading to the popularization of alternative food systems that take into account consumer safety and paving the way for the development of organic farming. The alternative food movement opposed pesticide use in food production and eventually, in the 1980s, genetically modified organisms (Reed 2010). More recently, the organic food industry has highlighted issues concerning soil quality, food contamination, and conservation of biodiversity (Guthman 1998, Heckman 2005). The alternative food systems discourse has increasingly been concerned with natural products and social responsibility (Williams and Hammitt 2001). However this discourse does not necessarily reflect the realities behind the production of certified organic food products.

Consumers consider buying organic as a way to “vote with their dollar” and mitigate the environmental impacts of conventional agriculture (Alkon 2008, Shreck et al. 2006). As organics have expanded since the 1980s, agribusinesses have appropriated the imagery of organics for profit (Williams and Hammitt 2001). Essentially, the use of the term organic in the market has been politically constructed by regulatory agencies and the parties in control—large agribusinesses (Guthman 2002, Guthman 2004). Today, we see how even small family owned organic farms rely on corporate farms to obtain tax and liability privileges (Guthman 2004). This brings up several issues related to how the organic industry moves from an alternative, counter-conventional agriculture movement to a more industrialized system.

Many consumers assume that all organics are produced sustainably (Rigby and Caceres 2001). This, however, is not always the case because a holistic definition of sustainability must account for the biophysical, economic, and social implications of production. Today, the legitimized use of the term “organic” has a structured and narrower meaning. According to the National Organics Program of the United States Department of Agriculture, the federal agency responsible for organic certification, organic agriculture is an “ecological production management system that promotes and enhances biodiversity, biological cycles and soil biological activity. It is based on minimal use of off-farm inputs and on management practices that restore, maintain and enhance ecological harmony (USDA 2010).” Furthermore, Guthman (2004) discusses the dilution of organic standards for certain organic products in order to accommodate certain businesses production. Thus, organic certification does not regulate social

factors such as farm worker labor conditions, which serve as the basis of operation and production in organic farms (Allen and Kovach 2000).

Although large scale certified organic farms that hire labor limit workers' exposure to known harmful pesticides, low farm worker wages, seasonal hiring and limitations of access to health benefits still pose concerns (Guthman 2004). In 2008, there were about 5 million acres of land allocated for organic farming in the United States (USDA: Economic Research Service 2008). The demand for organic food products has allowed corporations to capitalize on people's understanding of sustainability, fostering false ideas of what organic production entails (Shreck et al. 2006). This high demand for organics allowed agribusinesses to control the organic industry, using their resources to leverage the politics of organics and certification standards (Allen and Kovach 2000, Guthman 2004).

Even though most consumers perceive organic as a pesticide-free system, organic farm workers can still be exposed to allowed synthetic and potentially dangerous substances such as sulphur (Buck et al. 1997). Farm workers also face the high demands of complying with the certified organic farming standards, which include crop rotation schedules that allow farms to hire on a seasonal cycle thereby, limiting worker qualification for health care benefits , and stringent food harvesting techniques that may require manual labor (stoop and hand harvesting) (Strochlic et al. 2008, Walz 2004). Furthermore, most California organic growers pay minimum wage, despite the high ratio of sales per acre of land (Guthman 2004). Some organic farms still use piece rate payment, where farm workers get paid based on the amount of crops they harvest rather than by the hour (US Department of Labor 2008). This poses safety concerns because it forces workers to work more to get paid more (Strochlic et al. 2008). The lack of awareness about these labor-related issues poses social and ethical concerns, suggesting the need of incorporating farm labor standards into organics certification processes (CATA 2009, Newman 2009). In order to achieve regulatory reform, consumers must be made aware of the reality of farm labor issues in organic agriculture, yet few studies have examined consumer perceptions regarding labor practices in organic agriculture and the organic certification standards itself (Blum 2006, Howard and Allen 2006, Allen and Perez 2007, Shreck et al. 2006). A first step in this direction is to document how consumers perceive the current organic food movement, which may inform political strategies to change public opinion and mobilize support for a reform of organics certification to incorporate labor standards. Ultimately, this means aligning the public

organic food discourse, the ideologies of organic farming and the actual practices of organic agriculture.

I examined the significance of labor practices to people who purchase organic products by focusing on their awareness regarding the current organic food standards, perceptions of different food issues, their consumption patterns and purchasing motives for buying organic food products. From my findings, I suggest practical considerations that could help align consumer attitude, knowledge and behavior regarding organics.

METHODS

Study Site

To investigate organic food consumers' knowledge, attitude and behavior regarding farm labor practices, I surveyed consumers who purchase organic food at the Downtown Berkeley Farmer's Market (Center St. and Milvia St.) and the San Francisco Ferry Plaza Farmer's Market. I also surveyed consumers online by distributing the identical instrument on Facebook, Tumblr and various on-campus and off-campus listservs.

Data Collection

The three-page survey consisted of 13 questions aimed at understanding consumer knowledge, behavior and attitude towards organic foods (Appendix I). I administered surveys in person to anonymous participants. The entire survey took between 10 to 15 minutes to complete.

At the farmers' markets, I randomized participants and surveyed each site around the same hours, between 10 am and 2pm. In order to reduce bias in my sample, I walked through the farmer's market and asked every fourth person I saw to take the survey. I collected data for 3-4 hours starting at the opening hour of each farmer's market.

Statistics and Analyses

Variables

To determine consumers' formal understanding of organics, I included a question that scores consumer knowledge about the certification standards both in California (state-level) and the United States (federal-level). I scored each participant's response and gave them a numerical score which I then used to get insight as to whether consumers were knowledgeable of the organic certification standards. The survey questions, the answers to these and the reference to the answers can be found in the Appendix. I compared the scores from the two groups using a t-test to check for significant difference between the scores of the two groups. I also included an open ended question that asked consumers to define organic in the context of organic foods, how it is used in the market. Answers to this question were compared to and scored based on the definition used by the United States National Organic Certification Standards. I outlined the scoring rubric for this part in Table 1. Each consumer received a score based on the number of key words found in their response that can be found in the USDA organic definition. These knowledge-based tests helped me assess whether consumers were aware of the absence of the labor standards in organic food certification standards.

Table 1. Scoring Rubric based on USDA Organic Food Definition question. Each consumer received a score based on the number of keywords in their response that follow the USDA definition for "organic".

Score	Rubric	Key Words
0	No key words found in answer.	Cycling resources Ecological balance
1	1 key word found in the answer.	Biodiversity Production system
2	2 key words found in the answer.	Legal term Cultural
3	3 key words found in the answer.	Biological Mechanical practices
4	4 or more key words found in the answer.	Soil management Water management

To understand consumer behavior, I asked questions about what organic products consumers usually purchase, and the frequency of purchasing organic food at different markets (Whole Foods, Safeway, Locally owned grocery stores, Farmer's Market). Furthermore, in order

to determine consumers' general attitudes about organics, I asked participants to rank the importance of the different food issues. I compared how labor ranks relative to other food issues in order to evaluate how consumers value labor practices as a food issue or a concern compared to other food issues such as pesticide use, incorporation of genetically modified organisms and access for low-income people.

In addition, I asked consumers to indicate their position on different statements relating to organic food consumption practices and production in order to understand consumer motives for purchasing organic. To understand consumer attitudes regarding labor and motives, I asked participants, using a Likert Scale, if they were willing to pay more to improve farm labor conditions and to give farm workers better benefit. I also asked consumers if they believe that labor standards should ultimately be added in the organic certification standards.

RESULTS

Survey Respondents

I collected 134 survey responses, with 34 from Downtown Berkeley Farmers' Market, 30 from San Francisco Ferry Plaza and 70 online. I decided to aggregate the data for the Downtown Berkeley Farmers' Market and the San Francisco Ferry Plaza because the populations at these sites have similar demographics. I address this set as the "Farmers' Market" (FM) group, and refer to the online data as the "online" (ON) group. In both groups, more females took the survey with 53% in the Farmers' Market group and 74% in the online group. Over half of the respondents from the Farmer's Market group are in the "25-30" and "over 30" age groups. These Farmers' Market participants have attained their Bachelor's degree or a higher degree (Table 2). The respondents from the online group are in the "18-21" and "22-25" age groups. Most of these online respondents have either finished high school or are still in college.

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Demographic	Farmers' Market (n=64)	Online (n=70)
<i>Gender</i>		
Female	34	52
Male	25	18
Other	3	0
NA	2	0
<i>Ethnicity</i>		
American-Indian/Native American	1	0
African American/Black	3	1
Asian/Pacific Islander(Native Hawaiian)	5	35
White (not Hispanic or Latino)	44	15
Latino/Hispanic	1	17
Other	2	2
NA	8	0
<i>Age</i>		
18-21	10	45
22-25	8	17
26-30	12	5
Over 30	32	3
NA	2	0
<i>Income</i>		
Less than \$20,000	10	26
\$20,000-\$40,000	2	19
\$40,000-\$60,000	2	10
\$60,000-\$80,000	6	6
\$80,000-\$100,000	7	2
More than \$100,000	35	7
NA	2	0
<i>Highest Level of Education</i>		
Some High School, High School, Some College	14	42
Bachelor's Degree	29	19
Master's Degree, Professional Degree, PhD.	17	6
NA	4	3

Knowledge of Organic Certification

Out of 7 questions, participants in the Berkeley-San Francisco “Farmers’ Market Group” (n=64) has a mean score of 3.22, with mode 3 and median 4 on knowledge of the federal (USDA) organic certification standards tests. This group has a mean score of 2.75 for the California (CCOF) organic certification standard.. Participants from the “online” group (n=70) has the mean score 1.1 for the knowledge of US organic certification test and 0.71 for the California organic certification test. Using t-test, it shows that there was a significant difference in the scores between the sites for both the US and California tests (US: $p\text{-value} < 0.05$, $p\text{-value} = 4.347e-12$; CA: $p\text{-value} < 0.05$, $p\text{-value} = 1.673e-12$) (Fig 1.) In the Farmers’ Market group, 60.9% correctly responded “No” to the inclusion of labor regulations in the current federal organic food certification standards. For the same set of standards, 24.3% answered correctly with 64.3% as “unsure” from the online Group. Twenty-nine out of 70 respondents from the online Group (41.4%) and 26 out of 64 from the Farmers’ Market group (40.6%) wrote that labor-related certification standards should be included in the United States organic certification.

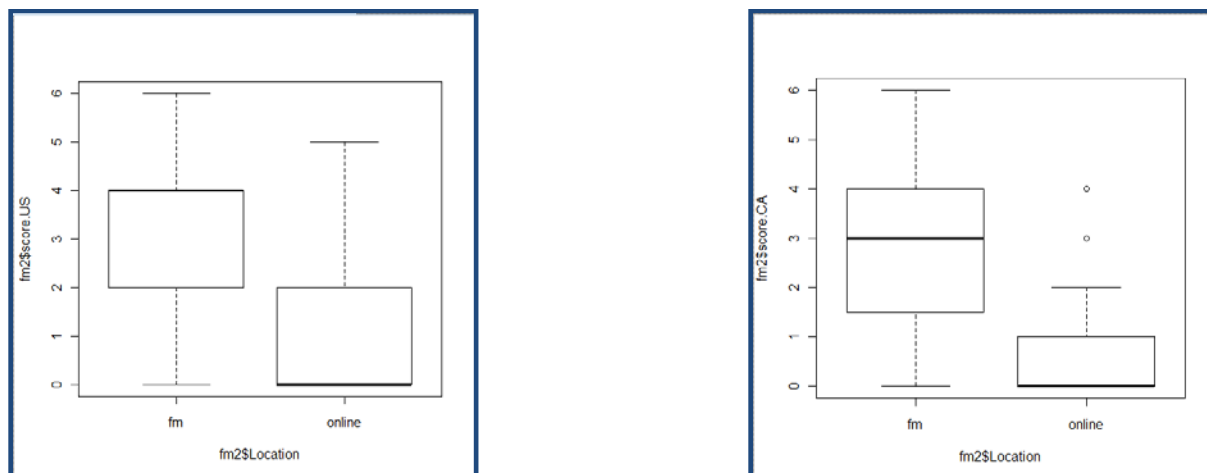


Fig1. Federal and State Certification Knowledge Scores. These boxplots show the difference in scores for the federal (US) and state (CA) certification knowledge test between the Farmers’ Market Group and the online Group.

Defining Organic

When asked to define “organic” as used in the organic food context, a majority of participants related “organic” to ideas of freshness, natural, health, lack of pesticides,

biodiversity, and social responsibility. When I compared participant answers to the definition used by the United States National Organic Certification Standards, 83% of the Farmers' Market respondents scored 0, as did 83% of the online participants. The rubric can be found in Table 1. From both groups, no one scored over 2 (Fig 2.). The following keywords showed in the answers but do not match the definition as defined by the USDA National Organic Program definition: no pesticides, no synthetic substances, no chemicals, healthy, sustainable, environmentally friendly, pure, and small-scale.

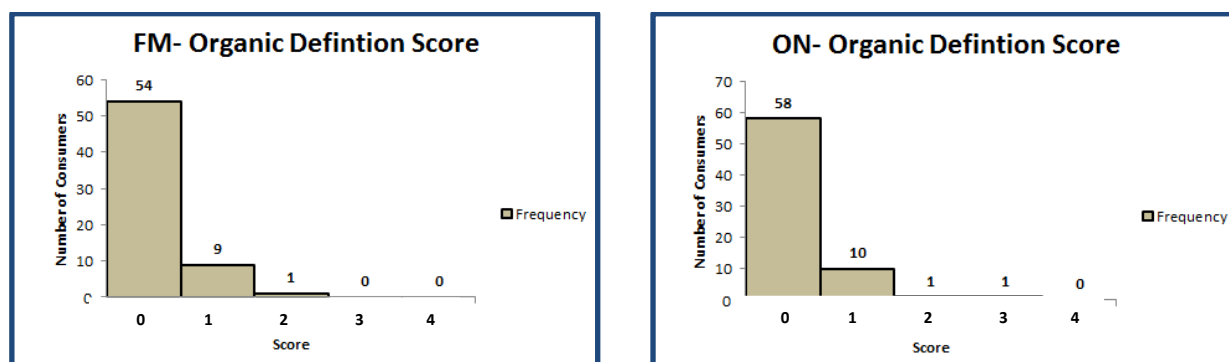


Fig 2. Distribution of consumers “Define Organic” question for both the Farmers’ Market (FM) and online groups (ON).

Consumption Pattern

When consumers were asked to indicate which products they purchase at farmer’s markets, 94% of the Farmers’ Market group respondents indicated buying produce (vegetables and fruit). Sixty-one percent of the online participants buy organic produce. Consumers also indicated the frequency of buying organic food at different markets. From the Farmer’s Market group, 42% buy at farmer’s market ‘often’ and 44% buy “sometimes”. Nine percent of the online participants buy from farmers’ market “often” and 44% buy sometimes. Forty-one percent of the consumers from the Farmers’ Market group shop at locally owned stores “often”. Twenty-nine percent of the consumers from the online group buy at locally owned grocery stores “often”. Figure 3 outlines the summary of the frequency of shopping from different sources of organic food purchases both for the Farmers’ Market group and the online group.

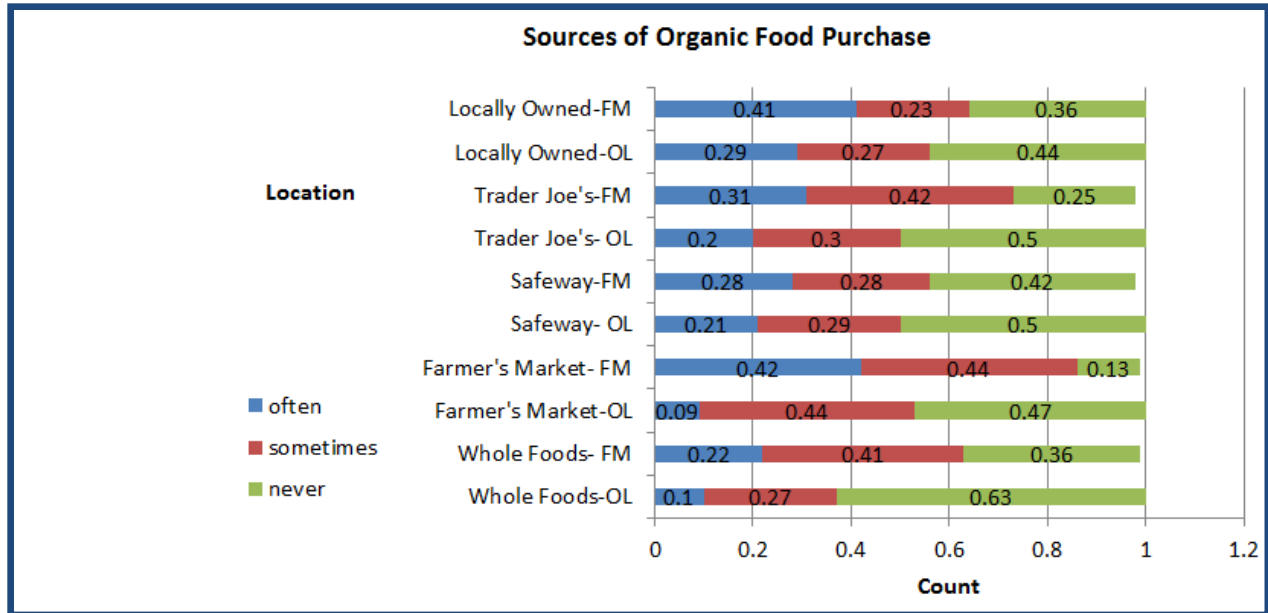


Figure 3. Frequency of Shopping at different markets that offer organic products. “Often” is defined as purchasing organics once a week, “Sometimes” defined as a few times a month, and “Never” as not at all. FM is for farmers’ market data and OL is for the online data.

Motives for Purchasing Organic Food

When asked to indicate their position on certain statements, 38% from the Farmers’ Market group indicated that they “Agree” and 23% said that they “Strongly Agreed” with the statement “I buy organic food to support farm workers” (Table 3). From the online group, 21% agreed with this statement and 11% said that they “Strongly Agree”. Nineteen percent of the respondents from the Farmers’ Market group either Disagreed or Strongly Disagreed with this statement. From the online group, 11% either indicated that they “Disagree” or “Strongly Disagree” with this statement.

Table 3. Percent of people who indicated “Agree” and “Strongly Agree” on statements related to labor.

Site	I buy organic to support local farm owners.	I buy organic to support farm workers.
Farmer’s Market n=64	38% Agree, 38% Strongly Agree	38% Agree, 23% Strongly Agree
Online n=70	21% Agree, 20% Strongly Agree	21% Agree, 11% Strongly Agree,

Importance of Labor

“Reduction of pesticide use in food” ranks as the highest priority for the consumers in the Farmers’ Market group with 69% ranking this as the “Top Priority”. “Protecting farm workers’ rights by improving job conditions” was ranked the highest by the online group, with 34% of the participants ranking this as “Top Priority” (Table 4.) Of the 6 food issues, “Food processing techniques” and “Increasing Farm worker salary” were ranked 5th and 6th respectively by the Farmers’ Market group. These same issues were ranked 3rd and 5th priority, respectively, by the online group. Consumers from the Farmer’s Market group ranked labor-related issues the lowest (bottom 3) compared to the online group, which ranked “Protecting farmworkers’ rights by improving job conditions” as the 1st priority.

Table 4. Percentage of consumers who ranked these food issues as “Top Priority”. Labor issues are highlighted.

Food Issue	Farmers’ Market	Ranking	Online	Ranking
Food processing techniques	41%	5	27%	3
Increasing farm worker salaries	31%	6	21%	5
Limiting the number of GMOs in food.	47%	2	26%	4
Reduction of pesticide use in food	69%	1	33%	2
Improving food access for low-income people.	64%	3	33%	2
Protecting farm workers’ rights by improving job conditions.	45%	4	34%	1

Including Labor in the Certification Standards

When asked which factors should ultimately be included in the organic certification process, 33% and 54.4% of the respondents from the Farmers' Market group and online group, respectively, indicated that Labor should be included. Responses as to why "Labor" should be incorporated into the standards include farm worker health and safety. Consumers also wrote down responses pertaining to sustainability and labor equity. There is a higher number of consumers from the online group who indicated that labor standards should be included in the certification process (Table 5).

Table 5. Which factors should be included in the organic certification standards? This shows the percentage of consumers from the Farmers' Market (FM) group and the online (On) group who think that labor standards should be included and the coded responses for their justification.

Factor	% of people who said "Yes"	Why?
Aesthetics	FM: n=13 , 20.3% On: n=11, 15.7%	FM: marketing strategies On: marketing strategies
Carbon Emissions	FM: n= 16, 51.5 % On: n=31, 44.2%	FM: important On: mitigate global warming, sustainability
Soil Management	FM: n=54, 84.3% On: n=48, 68.6%	FM: soil health, production benefits On: soil health, production benefits, sustainability, conservation,
Water Management	FM: n=51, 79.6% On: n=41, 55.4%	FM: water quality On: conservation, important
Labor	FM: n=21, 33% On: n=36, 51.4%	FM: health, important, fair trade On: equity, health, sustainability
Animal Welfare	FM: n=50, 78% On: n=44, 62.8%	FM: animal rights On: animal rights
Public Health	FM: n=49, 76.5% On: n=41, 58.5%	FM: disease control On: consumer safety, worker safety
Price Control	FM: n=29, 45.3% On: n=30, 40.5%	FM: lower prices, accessibility On: lower prices, accessibility
Sourcing	FM: n=29, 45.3% On: n=37, 53%	FM: mitigate global warming On: local, sustainability

When given the statement "I am willing to pay more if I can ensure that farm labor conditions are improved", 55% indicated that they agree and 17% strongly agreed from the Farmers' Market group. From the online group, 24% agreed and 16% strongly agreed. I ran a

chi-squared test for this statement and found that there is a statistically significant difference (p -value <0.05 , p -value=1.6E-6) between these sites for the responses. There is also a statistically significant difference (p -value <0.05 , p -value=0.01) between the Farmer's Market and online group for the "Agreed" and "Strongly Agreed". There were more participants from the Farmer's group who "Agreed" or "Strongly Agreed" with this statement. For the statement, "I am willing to spend more if I can ensure that farm workers get health benefits", 45% respondents agreed and 23% strongly agreed from the Farmers' Market group. The online group had 26% people agree and 17% people strongly agree. A chi-squared test shows that there is a statistically significant difference (p -value <0.05 , p -value=0.006) between the Farmers' Market group and the online Group for the overall responses to the second statement. However, there is no statistically significant difference between the number of respondents who agreed with the statement from these two sites.

Table 6. Willingness to pay for improved labor practices. These two statements particularly looks at willingness to pay to improve job conditions and for workers' increased access to health benefits.

Site	I am willing to spend more for organic food if I can ensure that farm labor conditions are improved.	I am willing to spend more if I can ensure that farm workers get health benefits.
Farmers' Market n=64	55% Agree, 17% Strongly Agree	45% Agree, 23 % Strongly Agree
Online n=70	24% Agree, 16% Strongly Agree	26% Agree, 17% Strongly Agree

DISCUSSION

Organic food consumers seem to value labor highly in their attitudes toward food purchases, but their behavior and knowledge do not align with these attitudes. Most consumers think that all organic farming is biophysically, socially and economically sustainable, defining "organic" as "natural," "lacking pesticides," "fresh" and essentially, good for the environment. The high demands of complying with the standardized organic farming regulations require 15% more labor in organic farms than conventional systems (Pimentel et al. 2005). Twenty four percent of hired labor is considered year round workers while the rest work seasonally (Waltz 2004), and seasonal workers earn a dollar less than year round workers (US Department of Labor

2005). Seasonal hiring brings into question job stability and health care access for organic farmers. Consumer attitudes, which I measured through “willingness to pay” survey responses, prioritization of labor-related food issues, consumer willingness to include labor standards in the organic food standards, and motives for purchasing organic food, suggest that organic food consumers are aware of these labor concerns. However, their attitudes towards labor equity and support for farm workers do not translate into labor conscious consumer purchasing patterns. Increasing knowledge about what the certification actually regulates can increase consumer awareness and therefore, open up dialogue about organic farm labor issues.

Knowledge

The low average scores for both the Farmers’ Market group and the online group on the certification test suggest that consumers lack knowledge about the certification standards that define organic foods. The USDA defines “organics” as food produced in accordance with the organic certification standards: “Organic production refers to the production system that integrates cultural, biological and mechanical practices that fosters cycling of resources, promotes ecological balance and conserves biodiversity (USDA 2010, National Organics Program 2012).” No participant scored 100% on knowledge of the organic certification process.

In the Farmers’ Market group, over half of the participants correctly answered that labor regulations are not included in the federal certification standards. From the online group, 64.3% (n=45) respondents did not know if labor regulations are included in these standards. No labor standards are included in the organic certification in both the United States and California. The fact that we, as a society, have relied on other people to produce our food have made it easier for us to detach ourselves from the production end of the process. Unfortunately, we have forgotten who takes part in this process and thus, consumers tend to focus more on the end results, the actual product (Guthman 2004). This pattern was also evident in consumers’ understanding of the use of the term organic. Consumers wrote responses such as “natural,” “no pesticides or chemicals” and/or “environmentally friendly.” These definitions do not align with the USDA-certification definition of organic. These popular definitions of organic can be attributed to the lack of awareness and interaction of consumers with what is actually going on in the farm.

Consumer perception of organic agriculture is mostly, if not solely, shaped by public discourse—through media, the presentation of organic food products in grocery stores and farmers’ markets—create concepts that relate to this idea of “going back to nature” (Alkon 2008).

Defining Organic

Consumers seem to relate their ideas of organics to notions of sustainable agriculture. However, unlike the “lite” version of organic production that is most common, “sustainable agriculture” takes into account environmental health, economic profitability, and social and economic equity (Feenstra 1997). The low mean scores from the certification test from both the Farmer’s Market group and the online group show that none of the participants knew fully what the federal and state (California) organic standards entail. Despite lack of knowledge regarding the stipulations of the organic standards, consumers still support this industry. This may relate to how consumers understanding of organics are heavily influenced by the public discourse, the way that the market presents organics. Survey respondents’ definition of the term “organic” provides further evidence for this claim. Consumers from both groups wrote down responses including “natural”, “fresh”, “no pesticides”, “healthier”, “sustainable”. These terms relate to the ideas of organic as either a connection to nature or an avenue for environmental justice (Alkon 2008). Although organic, during its earlier phase as an alternative food movement, embodied these two nuances, the institutionalized meaning of the word had become regulated that the actual use of the term of organic shifted into a narrower, more structured, regulated and “lite” (or shallow) definition (Allen and Kovach 2000, Guthman 2004). Essentially, this standardization of organics led to the proliferation of bigger businesses in the organic food industry and the movement of organics into an industry that simulated conventional farming (Guthman 2004).

Ranking Labor Issues

Participants from the Farmers’ Market group ranked labor-related issues as the last three priorities relative to pesticide use, accessibility of healthy food for low-income people, and limiting GMOs. Online participants ranked increasing farm worker salary as the lowest while

improving job conditions ranked first. This finding aligns with those discussed by Perez and Allen in a survey of college students from a liberal college, University of California Santa Cruz, in that college students ranked improving job conditions for farm workers as one of the top food issues (Allen and Perez 2007). College students, especially those from more liberal colleges, tend to be more exposed to liberal thinking and social justice issues. Awareness about these issues politicizes students and helps them understand the injustices revolving around the socially problematic conventional agricultural system. This can be related to the intergenerational gap between the Farmers' Market group and the online group, where there are more college aged students currently in college who rank labor issues higher than the older respondents who have finished college from the Farmers' Market group.

Inclusion of Labor Standards and Willingness to Pay

Most participants valued the inclusion of labor in organic certification standards, reasoning that people should be paid fairly for their labor. Those who said that it should not be included reasoned that labor standards should be certified under a separate label or certification process. This suggests that most consumers value labor but are split between wanting to include labor standards in the current certification process and creating a new certification process purely based on labor regulations. For consumers purchasing other “environmentally-friendly” products, they perceive single issue certification labels as a way for them to take into account and focus on individual issues that they value and support (through purchase) (Young et al. 2010). In a survey of 1000 households, consumers expressed interest in having standards and a separate food label that would guarantee a living wage for farm workers (Howard and Allen 2006). Including labor standards in the organic certification standards may put pressure on these organic farms to improve the quality of labor for their workers. It can also imply increased prices on top of the already premium prices of organic food which brings into question accessibility for people who cannot afford these goods. A majority of the consumers in this study, the people who buy and therefore have access to these products, indicated their willingness to pay more to ensure that farm workers get treated fairly through increased access to health benefits and improved job conditions. This suggests that consumers who already purchase organic on a regular basis would be willing to support this fair labor label.

Behavior

From the Farmers' Market group and the online group, most survey respondents often purchase produce in the Farmers' Markets. This suggests that consumers, whether they are aware of this or not, are buying from smaller organic farms. The study by Stochlic et al. concludes that smaller farms with high organic production tend to have better wages and better opportunities for their employees (Stochlic et al. 2008). This contradicts the claim that working in conventional farms is better because there are fewer abuses (Buck et al. 1997). These contradicting notions stem from the varying attitudes of farm owners and ultimately, the capitalist agenda of these farms. A number of small farms rely on corporate farms for resources, subjecting them to the stipulations of agribusinesses (Guthman 2004). This implies that produce coming from farmers' market or smaller farms do not automatically indicate the presence of fair labor.

Attitude-Behavior Gap

I observed the attitude-behavior gap in the findings of this study. Over half of the consumers from both the Farmers' Market and the online group indicated that labor should be included in the organic certification standards. However, less than half of the consumers agreed with the statement "I buy organic to support farm workers", suggesting that consumers do not necessarily prioritize farm workers and thus, labor concerns when purchasing organic foods (Hearne and Volcan 2002). This can be further observed particularly in the Farmer's Market group wherein consumers ranked labor-related issues as the least of their priorities relative to other food issues. This implies that other motivations for buying organic may include mitigating environmental issues and health and safety concerns about pesticides (Zanoli and Naspetti 2002). Although consumers agree that labor practices should be regulated, consumers purchase organic produce for reasons other than supporting farm workers.

This same gap can be observed through the consumer responses on the willingness to pay statements. A higher percentage of consumers from the Farmers' Market group were willing to pay more to ensure that farm working conditions are improved than the consumers from the online group (Table 6). Increased prices of organic produce by taking into account social

externalities may hinder low-income consumers from purchasing more socially responsibly produced organic products (Vermier and Verbeke 2006, Padel and Foster 2005). Most of the online group consumers indicated a yearly income of less than \$40,000 (Table 2). This difference between the Farmers' Market and the online group indicates how socio-economic status can deter labor conscious consumers from supporting a more ethical organic industry, thus, contributing to the existence of the consumer attitude and behavior gap.

Limitations

Time, sample size, sample site and the demographic information of the participants limited the scope and inference of this study. I was only able to go to 2 sites (San Francisco Ferry Plaza and Downtown Berkeley Farmer's Market) to survey participants. The rest of the participants were recruited online through listservs and social networking sites (Facebook, Tumblr, etc.). Furthermore, although the randomization technique mentioned in the Methods section was implemented, the participants were mostly to older, upper middle class female, and White/Caucasian- identified. Also, the survey findings tend to be limited to the more liberal thinking consumers, which essentially make up a majority of the population in this study.

Future Directions

Increasing sample size, sampling in different areas, and refining the questionnaire can help improve the study in the future. Increasing sample size can increase the power of the analysis. Sampling in different areas can increase the diversity of the sample (demographics) and can possibly give a better inference as to consumer behavior, knowledge and attitude towards labor. Finally, refining the survey and making the questions more specific and less wordy can help consumers focus more on the questions rather than on the length of the survey, which in turn, can give more accurate responses.

Broader Implications

Production in organic farms needs change. The gaps in consumer knowledge, attitudes

and behavior may be closed through increased visibility and public awareness about the realities of labor in organic farming. By doing so, this can open the way to the inclusion of labor standards in the certification process and bringing consumer practices more in line with their perceptions. Increased public awareness about labor on organic farms and its similarities with labor on conventional farms can influence the public's attitudes regarding the organic label.

It can bring more awareness to the politics behind the organic industry, thereby allowing consumers to understand how their ideas about organic and sustainability do not actually follow the shallow or "lite" definition of organic as it is used in the market (Guthman 2004). Making organic certification more transparent may change behavior to align it with attitude by educating the public about organic certification with attitude by educating the public about organic certification. Changing this discourse makes it possible to change the political economy of organics. Furthermore, this increased awareness and possibly the politicization of people around the issue of labor in organic farms can leverage reform of the current certification standards that may close the gap between consumer attitudes and consumer knowledge. Making certification standards more holistic, taking into account economic, social and biophysical factors, may align consumers' attitudes and perceptions of organics with what the standards actually includes. Finally, the possibility of creating separate labor standards may expose the farms with fair labor practices and those that do not. A study surveying 1000 households show that consumers would support a label associated with giving farm workers fair living wages (Howard and Allen 2006). By having this label, labor in farms become more transparent for consumers who actually want to support farms that guarantee economically, socially and environmentally conscious and just labor practices.

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APPENDIX

I.Survey. My name is Alyssa Tison and I am a 4th year undergraduate student at UC Berkeley, majoring in Environmental Sciences. For my Senior Thesis, I aim to understand organic food consumers’ preferences and purchasing behavior. This survey includes 3 pages, with a series of 13 questions. It will take 10-15 minutes to complete. Please read each question thoroughly and answer each to the best of your abilities. Thank you for participating in this study. If you would like to get more information, please feel free to email me at alyssatison@berkeley.edu.

Yearly Household Income:

Age (in years): _____

Gender: Male Female Other

- Less than \$20,000
- \$20,000 -\$40,000
- \$40,000-\$60,000
- \$60,000 -\$80,000
- \$80,000-\$100,000
- More than \$100,000

Race/Ethnicity:

- American Indian/Native American
- African-American/Black
- Asian/ Pacific Islander, Native Hawaiian
- White (not Hispanic or Latino)
- Latino/Hispanic
- Other: _____

Highest Level of Education Completed

- Less than High School
- Some High School
- High School (Diploma, GED)
- Some College/Associates Degree
- 2-year Associates Degree
- 4-year Bachelor’s Degree
- Master’s Degree
- Doctoral Degree (PhD)
- Professional Degree (JD, MD)
- Other:

Indicate how often you shop at the following markets.

	Often (once a week)	Sometimes(few times/ month)	Not at all
Farmer’s Market			
Whole Foods			
Safeway			
Trader Joe’s			
Locally owned grocery stores (Berkeley Bowl, etc.)			
Other (Please indicate):			

What organic products do you buy? Mark all that apply.

- Produce (Vegetables, fruit)
- Dairy Products (Cheese, yogurt, milk)
- Cooked food
- Detergent and other cleaning supplies
- Cooked food
- Other: _____

How often do you buy organic food with these labels important are these food labels to you? Indicate their importance to you.

Certification Label	Frequency			Importance Is this important to you?
	Often (once a week)	Sometimes(Few times/ month)	Not at all	
Fair Trade Label				<input type="checkbox"/> Yes <input type="checkbox"/> No
Certified Organic				<input type="checkbox"/> Yes <input type="checkbox"/> No
Locally Produced Label				<input type="checkbox"/> Yes <input type="checkbox"/> No
Water Quality Protection				<input type="checkbox"/> Yes <input type="checkbox"/> No
Humane Animal Treatment				<input type="checkbox"/> Yes <input type="checkbox"/> No
US Grown				<input type="checkbox"/> Yes <input type="checkbox"/> No
Union Label				<input type="checkbox"/> Yes <input type="checkbox"/> No
Other: _____				<input type="checkbox"/> Yes <input type="checkbox"/> No

Define Organic, as used in the context of organic food products. Write no more than 3 sentences to answer this.

Read the question and answer Yes or No.

Question	Included in US Federal Certification?	Included in California Certification?	If you answered NO, should it be included in the certification standards?
Organic Food have NO contact with ANY synthetic substances.	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
Pests may be controlled using synthetic substances.	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
All organic foods contain only non-organic substances.	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
Organic Food standards include farm labor practices.	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
Organic Food standards regulate human health.	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
Organic Food standards regulate Carbon Emissions/Footprint	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
Organic Food standards consider soil quality and management.	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No

Indicate how important these food issues are to you.

	Top Priority	Important but low priority	Somewhat Important	Not Important
Food processing techniques				
Increasing farm worker salary				
Limiting the GMOs* in food				
Reduction of pesticide use in food				
Food access for low-income people.				
Improving job conditions				

*GMOs: Genetically Modified Organisms

Indicate your position about the following statements.

Question	Strongly Disagree	Disagree	Agree	Strongly Agree
Farmers meet organic food standards.				
The government effectively regulates food production.				
Organic food standards help the food industry.				
Organic food standards should include labor standards.				
Organic food standards should include standards on animal welfare.				
I buy organic to protect myself from consuming pesticides.				
I buy organic food to support local farm owners.				
I buy organic food to oppose industrialized conventional agriculture.				

I buy organic because it is a political stand.				
I buy organic to support farm workers.				
I buy organic food because it is fresher than conventionally grown food.				
I buy organic to interact with people growing my food.				
Question	Strongly Disagree	Disagree	Agree	Strongly Agree
I am willing to spend more if I can ensure that all the organic standards are met.				
I am willing to spend more if I can ensure that animals are treated humanely.				
I am willing to spend more if I can ensure that carbon emissions are regulated.				
I am willing to spend more for organic food if I can ensure that job conditions are improved.				
I am willing to spend more if I can ensure that farm workers get health benefits.				
I am willing to spend more if I can ensure that there are no GMOs in my food.				

Ultimately, what do you think should be included in the organic production process? Why? Write your answer in 1-2 sentences.

Factor	Should this be included?	Why?
Aesthetics	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Carbon Emissions	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Soil Management	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Water Management	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Labor	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Animal Welfare	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Public Health	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Price Control	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Sourcing (ie. Where items	<input type="checkbox"/> Yes <input type="checkbox"/> No	

are sold)		
Other (Please indicate):	<input type="checkbox"/> Yes <input type="checkbox"/> No	

Thank you for participating in this study. If you would like to get more information, please feel free to email me at alysstison@berkeley.

II. Answers to the Certification Knowledge Test. Citations from the USDA and CCOF Organic Certification Standards

Regulation	Included in the US?	Included in CA?	Cited in the USDA/CCOF Standards
Organic Food have NO contact with ANY synthetic substances.	NO	NO	§ 205.105. (a) Synthetic substances and ingredients, except as provided in § 205.601 or § 205.603;
Pests may be controlled using synthetic substances.	YES	YES	§ 205.603 Synthetic substances allowed for use in organic livestock production.
All organic foods contain only organic substances.	No	No	Claims. Oral, written, implied, or symbolic representations, statements, or advertising or other forms of communication presented to the public or buyers of agricultural products that relate to the organic certification process or the term, "100 percent organic," "organic," or "made with organic (specified ingredients or food group(s))," or, <i>in the case of agricultural products containing less than 70 percent organic ingredients, the term, "organic," on the ingredients panel.</i>
Organic Food standards include farm labor practices.	No	No	None found.
Organic Food standards regulate human health.	Yes	Yes	§ 205.236 Origin of livestock. § 205.238 Livestock health care practice standard.
Organic Food standards regulate Carbon Emissions/Footprint	No	No	None found.
Organic Food standards consider soil quality and management.	Yes	Yes	§ 205.203 Soil fertility and crop nutrient management practice standard.