

# How Values Shape Program Perceptions: The “Organic Ethos” and Producers’ Assessments of U.S. Organic Policy Impacts

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## Abstract

*Among the more recognizable programs related to natural and sustainable food is the United States Department of Agriculture’s National Organic Program. Although the robustness of the organic food market is difficult to contest, many debate the extent to which U.S. organic policy outcomes adequately serve consumers and the organic agriculture producers they rely on. This paper engages the debate from the perspective of certified organic producers. Drawing on the results of a nationwide survey of USDA-certified producers, we first provide a snapshot of how producers assess the environmental, consumer, and market impacts of U.S. organic food policy. We then examine the extent to which organic producers’ policy impact perceptions are associated with their alignment with an “organic ethos”—understood as producers’ commitment to core organic principles and the organic movement. The paper highlights producers’ values as perceptual filters and cognitive mechanisms that help shape producers’ policy impacts perceptions, illustrating a contributing factor to the enduring nature of organic policy debates.*

**KEY WORDS:** governance, environment, developed countries, biotechnology, organic agriculture

## 价值观如何影响对计划的看法：“有机宗旨”和生产者对美国有机政策影响的评估

美国农业部的国家有机计划是与自然和可持续食品有关的众多受认可计划之一。尽管有机食品市场的稳健性难以争论，但许多辩论有关于美国有机政策结果能在多大程度上充分服务消费者和其所依赖的有机农业生产者。本文以获得有机认证的生产者的角度参与了这一辩论。通过使用全国范围内对美国农业部有机认证生产者的调查结果，笔者首先简要说明了生产者如何评估美国有机食品政策对环境、消费者和市场所造成的影响。笔者随后检验了有机生产者对政策影响的看法在多大程度上和他们对“有机宗旨”的遵循有关。此宗旨被认为是生产者对核心有机准则和有机运动的承诺。本文强调了有机生产者的价值观，将该价值观视为能决定生产者对政策影响的看法的观念过滤器和认知机制，同时阐述了一个因素，用于解释有机政策辩论的持久性。

**关键词：**治理，环境，发达国家，生物技术，有机农业

## Cómo los valores forman las percepciones de un programa: las evaluaciones del ethos orgánico y de los productores de los impactos de la política orgánica de EE.UU.

*Entre los programas más reconocibles relacionados con alimentos naturales y sostenibles se encuentra el Programa Nacional Orgánico del Departamento de Agricultura de los Estados Unidos. Aunque la solidez del mercado de alimentos orgánicos es difícil de impugnar, muchos debaten en qué medida los resultados de la política orgánica de los Estados Unidos sirven de manera adecuada a los consumidores y a los productores de agricultura orgánica de los que dependen. Este documento aborda el debate desde la perspectiva de los productores orgánicos certificados. Basándonos en los resultados de una encuesta a nivel nacional de productores certificados por el USDA, primero proporcionamos una visión general de cómo los*

*productores evalúan los impactos ambientales, de consumo y de mercado de la política de alimentos orgánicos de EE. UU. Luego examinamos hasta qué punto las percepciones de impacto de la política de los productores orgánicos se asocian con su alineación con una "ética orgánica", entendida como el compromiso de los productores con los principios orgánicos fundamentales y el movimiento orgánico. El documento destaca los valores de los productores como filtros de percepción y mecanismos cognitivos que ayudan a configurar las percepciones de los impactos de las políticas de los productores, ilustrando un factor que contribuye a la naturaleza duradera de los debates sobre políticas orgánicas.*

**PALABRAS CLAVE:** gobernanza, medio ambiente, países desarrollados, biotecnología, agricultura orgánica

## Introduction

**S**ustainable foods draw increasing attention from consumers and food retailers. As agricultural practices advance in sophistication, food markets consolidate, and global food systems integrate, consumers are left feeling evermore disconnected from their food sources (Kneafsey et al., 2008). Many shoppers are concerned by the chemicals and industrial processes that characterize most agricultural practices and, in turn, strive to avoid them in their purchasing decisions (Yiridoe, Bonti-Ankomah, & Martin, 2005). Consumer choices are further shaped by a suspicion over the role of some agricultural technologies—such as genetic engineering—and what unknown risks such innovations might pose to human and environmental health (Eiser, Miles, & Frewer, 2002).

Among the more recognizable governmental programs tied to conceptions of natural and sustainable food is United States Department of Agriculture (USDA) organic certification. As established by the Organic Foods Production Act under the 1990 Farm Bill, food marketed and sold in the United States as “organic” must be produced in accordance with USDA national organic standards by an operation certified under the National Organic Program. Facilitated by uniform national standards and driven by consumer demand for natural and sustainable food, organic agriculture in the United States has evolved from a niche market to a \$47 billion a year industry; estimates suggest that as many as 82% of U.S. households purchased organic food products in 2016 (OTA, 2017).

Although the robustness of the organic market is difficult to contest, many question the extent to which U.S. organic policy adequately serves consumers and the organic agriculture producers they rely on (Arcuri, 2015). For example, some argue that USDA organic certification has facilitated the cooptation of organic markets by conventional agribusiness (Jaffee & Howard, 2010; Obach, 2015). Others, including the USDA, raise the concern that National Organic Program requirements create a formidable barrier impeding potential organic producers from pursuing organic certification (Carter, Scott, & Mahallati, 2017). Still others contend that the USDA’s minimal organic standards dilute the positive environmental impacts of organic practices, and, as a result, organic policy fails to fully realize potential ecological and biodiversity benefits (Guthman, 2014).

This paper engages the debate over U.S. organic food policy from the perspective of certified organic producers. Drawing on the results of a nationwide survey of producers certified organic under the USDA, we first provide a snapshot of how certified

organic producers assess select environmental, consumer, and market impacts of U.S. organic food policy. We then examine the extent to which certified organic producers' policy perceptions are associated with their alignment with an "organic ethos"—reflecting the producers' commitment to core organic principles and the organic movement. Taking a cue from policy process literature, we test the expectation that the more closely aligned a producer is with an organic ethos, the less likely they are to perceive favorable organic policy impacts, and the more likely they are to emphasize unfavorable ones. The examination thus highlights producers' values as perceptual filters and cognitive mechanisms that help shape producers' perceptions of organic policy impacts, identifying a contributing factor to the enduring nature of food policy debates.

The paper proceeds through several sections. The first section provides a background on U.S. organic food policy, leading up to contemporary disagreements regarding the environmental, consumer, and market consequences of today's organic policy under the USDA. The second section then draws from public policy literature to discuss how values are expected to shape producer perceptions of organic policy impacts. The third section describes the organic producer survey and resulting data, followed by a presentation of our descriptive and analytical results. A discussion follows, assessing the implications of study findings for U.S. organic food governance and food policy, more generally.

## **U.S. Organic Food Policy: Background and Policy Debates**

To understand contemporary organic food policy debates, it is first helpful to have a grasp of organic agriculture's history in the United States. Although organic farming methods date back to the early 1900s and have connections to much earlier agricultural systems of Europe and Asia (Guthman, 2014; Obach, 2015), today's organic agriculture is best understood as a response to twentieth-century agricultural production innovations. The years following World War II, in particular, witnessed dramatic technological innovations that are collectively referred to as "conventional" agricultural practices. Techniques such as mechanization, off-farm inputs (e.g., synthetic pesticides and fertilizers), and breeding advancements (e.g., bioengineering) increased yields and reduced reliance on human and animal labor. The production and efficiency gains promised by conventional agriculture, combined with its promotion through government policies ranging from agricultural loans to cooperative extension programs (Henke, 2008; Lyson, 2008), resulted in widespread adoption among farmers.

A segment of the agricultural community, however, rejected conventional agriculture methods, and it is from this community that the U.S. organic movement emerged. An outgrowth of the earlier termed humus farming, organic methods began with a focus on soil health and the recycling of organic waste to support soil fertility (Heckman, 2006). Although the principle of environmental sustainability dates back to early organic agriculture publications, such as prominent U.S. organic pioneer J.I. Rodale's (1945) *Pay Dirt* and agricultural scientist Albert Howard's (1946) *The War in the Soil*, it became a defining feature in the eyes of many when the organic movement became associated with the 1960s counterculture (Pollan, 2006). Through interaction

with this and other social movements, the values associated with organic agriculture grew to extend beyond environmentalism. For instance, following the International Federation of Organic Agricultural Movement's (IFOAM) principles of health, ecology, fairness, and care, Sligh and Cierpka (2007) describe organic values as grounded in environmental stewardship, accountability, and fairness.

These broader conceptualizations notwithstanding, at its core organic agriculture emphasizes reliance on “natural” and environmentally sustainable practices, such as crop rotation and other soil conservation methods, and avoidance of synthetic input substances through techniques ranging from organic-origin fertilizers (e.g., compost manure), to implementation of biological pest control systems in place of pesticides.<sup>1</sup> Organic farming is further often grounded in the belief that such methods produce superior food. Rodale, for example, frequently referenced organic practices' ability to produce higher quality and wholesome products—an assumed result of processes that avoid synthetic and off-farm inputs, environmental quality degradation, and threats to human health (for summary see O'Sullivan, 2015).

Since the inception of organic agriculture as an identifiable method, practitioners struggled to protect the definition of “organic” and the principles it represented from dilution by products and processes that were organic in name only. As consumer demand for organic food grew during the 1960s and 1970s, spurred in part by publications such as Rachel Carson's (1962) *Silent Spring*, organic advocates grew increasingly concerned about producers passing off conventionally raised products as organic; “organic phonies” in the words of Rodale (1971). Certification programs were established in response to the threat to provide third-party verification that agricultural products were raised in accordance with a program's specified organic standards. Beginning with the California-based Rodale Press certification in 1971, organic certification programs spread quickly, and by 1989 dozens of governmentally and privately administered programs were found across the United States—each with its own set of organic standards.

The proliferation of different organic certification standards again brought the meaning of organic into peril, and motivated calls for uniform national organic standards. The event often credited with galvanizing public support for federally established standards was a 1989 *60 Minutes* special on Alar—a cosmetic additive used to give apples a brighter and more uniform color—which highlighted National Resources Defense Council claims that Alar had the potential to cause cancer. The Organic Foods Production Act was passed the following year, authorizing the USDA's Agriculture Marketing Service to establish the National Organic Program to oversee the creation of national organic standards and their enforcement. The move drew considerable support from the organic farming community; in the words of International Organic Inspectors Association Executive Director Margaret Scoles: “the [organic] industry went to the USDA ... [because] the organic community saw that there was a need for uniform regulation because there were cheaters, and there was no way to stop a cheater” (Scoles, 2013).

While the organic community largely applauded Organic Foods Production Act adoption, the Act's implementation raised a new concern. Organic farming proponents voiced suspicions that organic standards developed by the USDA—a recognized proponent of conventional production practices and large-scale agribusinesses—would fail to reflect the principles that many considered to be at the heart of organic

agriculture. The concerns were substantiated in 1997 when the USDA released the National Organic Program proposed rule. Organic farming advocates raised up to nine major contentions with the rule (Rawson, 1998). However, inclusion of the “big three”—irradiation of produce, municipal biosolids (sewage sludge) as fertilizer, and genetically modified organisms—drew the greatest attention.<sup>2</sup> Although the big three were omitted from the final national organic standards adopted in 2000, the event confirmed for many that the greatest threat to traditional organic values resided in the potential for the conventional agricultural industry, buttressed by the support it engendered from the USDA, to redefine the meaning of organic agriculture on the basis of USDA standards (Obach, 2015).

### ***Contemporary Debates: Organic Standards and Organic Policy Impacts***

With national organic standards established by the USDA, considerable attention has shifted to debates over organic agriculture’s relationship with today’s complex and global food system (Charles, 2014; Haspel, 2014; Obach, 2015) and the National Organic Program’s success in supporting organic advocate’s policy goals. Organic food sales have doubled in the past ten years (OTA, 2017), but the number of certified organic producers has not increased rapidly enough to match the volume of demand. Contemporary organic foods are not necessarily local, produced on a small scale, or absent synthetic inputs. Rather, the organic market is increasingly reflective of larger agricultural production and supply chain trends that emphasize global market opportunities and feeding a growing population. Moreover, organically labeled products are often globally sourced multi-ingredient processed foods. For organic farmers like Rodale, the presence of such industrial practices and conventional food system elements in the organic market would be heresy.

Producers that participate in the market as certified organic have a range of motivations, from philosophical to economic (Carter, Heikkila, & Weible, 2018), and concerns are continuously raised that the market is becoming dominated by conventional producers seeking organic price premiums without a commitment to truly organic principles or outcomes. Outcries of organic losing meaning and being co-opted by agribusiness are common, leading some consumers and producers into alternative markets such as local, non-GMO, fair trade certified, or sustainably produced (Mosier, 2017; Obach, 2015). Disenchantment with USDA standards is sufficient to motivate the creation of alternative and supplemental certification programs, such as the Real Organic Project and the Rodale Institute’s Regenerative Organic Certification, to offer an additional layer of standards rigor where the USDA standards are deemed inadequate. The effectiveness of National Organic Program regulations at supporting environmental sustainability—a key organic movement objective—remains a heated dispute (Obach, 2007, 2015). As stated by Guthman (1998, p. 137):

Organic food provision, after all, is seemingly incompatible with the practices and objectives of agribusiness, in particular the latter’s approach of valorizing short-term productivity and profits over long-term environmental and food quality ... however ... the political construction of the meaning of “organic” and its institutionalization in regulatory agencies has facilitated both the proliferation of agribusiness entrants and their adoption of questionably sustainable practices.

This paper examines how certified organic producers perceive National Organic Program impacts along three dimensions, modeled from explicit goals of the 1990 Organic Foods Production Act and subsequent National Organic Program regulations. These include: environmental impacts, specifically the Program's success at improving environmental conditions and biodiversity; consumer impacts, such as increased consumer understanding of organic practices and confidence in organic products; and market impacts, such as whether the Program fosters a profitable market for organic products, and whether it facilitates cooptation of the market by conventional agribusiness. The paper further seeks an understanding of how producers' substantive values regarding organic practices shape their perceptions of Program impacts, as discussed in the following section.

### **How Values Shape Perceptions of Policy Impacts**

A central premise of this paper is that the beliefs and values held by agricultural practitioners shape the manners in which they assess the outcomes of agricultural policies. We derive this premise from a robust lesson of the policy process literature—that individuals' perceptions regarding public policies and their consequences are influenced by the cognitive processes through which people take in and make sense of information (Douglas & Wildavsky, 1983; Jones & Baumgartner, 2005; Sabatier, 1988). Underlying the expectation are two central assumptions. The first is that the empirical impacts of public policies are beyond any individual's ability to accurately assess, and, as a result, people rely on a combination of their own experiences and the opinions of those they trust to form policy impact judgments (Kahan & Braman, 2006; Taber & Lodge, 2006). The second is that how individuals consume and synthesize information is systematically influenced by the normative values they hold. Following Kahan and Braman (2006, p. 150), who conceptualize values as "cultural commitments," we assume that values act as cognitive filters shaping individuals' policy perceptions:

[W]hat citizens believe about the empirical consequences of ... policies derives from their cultural worldviews. Based on a variety of overlapping psychological mechanisms, individuals accept or reject empirical claims about the consequences of controversial policies based on their vision of a good society.

A number of cognitive and psychological mechanisms through which values and beliefs shape perceptions has been documented and examined across a range of disciplines. Two are particularly relevant for this study: confirmation bias and attitude polarization. Widely accepted across social science fields (Taber & Lodge, 2006), confirmation bias suggests that human perception is subject to selective attention, exposure, and judgment processes. In other words, individuals are more likely to recognize, regard as credible, and incorporate information that aligns with or supports their previously held attitudes and beliefs (Abelson et al., 1968; Nickerson, 1998). Going further, attitude polarization is the idea that individuals holding strong attitudes or beliefs become more extreme on those attitudes or beliefs because they assimilate supporting evidence uncritically, but reject contradictory evidence (Taber & Lodge, 2006).



Cognitive mechanisms such as confirmation bias and attitude polarization have been shown to manifest such that individuals presented with the same information report systematically divergent perceptions and conclusions on a given political or policy topic (Kahan & Braman, 2006; Taber & Lodge, 2006). The way these cognitive mechanisms influence perceptions and decisions is assumed to be protective in nature—reinforcing the values that individuals associate with their personal and social identities, or “who they already understand themselves to be” (sometimes referred to as identity-protective cognition; Kahan, Braman, Gastil, Slovic, & Mertz, 2007). Where more general political science and policy literature conceptualizes individual values and beliefs in terms of political ideology (Taber & Lodge, 2006) or more abstract and universal cognitive orientations (Kahan & Braman, 2006), this paper is concerned with how the substantive value orientations of agricultural practitioners shape their perceptions of organic policy. Our conceptualization of substantive values in this context rests in an individual’s relative commitment to an “organic ethos.”

### ***The Organic Ethos and Expected Policy Impact Perceptions***

We conceptualize an organic ethos as a commitment to core organic agriculture principles such as environmental stewardship and reliance on nonsynthetic materials, and to organic agriculture and the organic movement more generally. Through this conceptualization, the more a producer is driven by her personal values to practice organic methods, or the more a producer feels compelled to support the organic movement, the closer the producer is assumed to align with an organic ethos. Such a producer can be contrasted against the opposite end of an ethos-alignment spectrum, where we assume a producer approaches organic agriculture more instrumentally, seeing organic methods and certification more as a marketing device than a guiding framework or philosophical orientation.

In the context of this paper, confirmation bias and attitude polarization suggest the suspicion that much of the organic community holds toward the USDA’s interests and objectives, as described above, combined with the rapid influx of corporate agribusiness-affiliated operations into the organic market, make agricultural producers who more closely align with an organic ethos skeptical of the National Organic Program’s ability to generate positive policy outcomes. More specifically, we expect those producers exhibiting close alignment with an organic ethos to hold sentiments similar to Guthman’s (2014) aforementioned doubts regarding the program’s success at supporting environmental health and biodiversity. Similarly, we anticipate producers exhibiting close alignment with an organic ethos perceive the USDA standards as creating more confusion than clarity when it comes to communicating organic methods, as they represent only elements of what organic advocates consider fundamental organic principles. While we assume that the robust growth of the organic market is hard for even the most fervent critics to reject, we anticipate producers more closely aligned with an organic ethos are less enthusiastic in their acknowledgment of the trend than their instrumentally motivated counterparts, and less likely to attribute the growth to the National Organic Program.

Furthermore, drawing on cognitive mechanisms such as those referenced above, policy theory suggests that in contentious policy contexts, stakeholders exaggerate

the motives, behaviors, and influence of political opponents (Sabatier, Hunter, & McLaughlin, 1987; Weible, Sabatier, & McQueen, 2009). The expectation draws on cognitive dissonance and information processing theories to posit that people are more likely to pay attention to and more vividly remember harms and losses when compared to gains and victories (Fischer, Ingold, Sciarini, & Varone, 2016; Sabatier et al., 1987). We extend this proposition to suggest that producers closely aligned with an organic ethos are more likely to emphasize the burdens that the National Organic Program imposes on certification applicants. Additionally, based on an identity defined in opposition to conventional agriculture (Mosier, 2017; Sligh & Cierpka, 2007), producers that align more closely with an organic ethos are more likely to gauge conventional agriculture's efforts to penetrate the organic foods market as successful, at the cost of "truly" organic farmers.

A translation of these assumptions and expectations to predicted relationships with study measures is provided in Table 1, grouped by three organic policy impact dimensions: environmental impacts, consumer impacts, and market impacts. The basic hypothesis underlying all expectations can be summed up as: *A producer's organic ethos alignment is negatively associated with favorable U.S. organic policy impacts and positively associated with unfavorable policy impacts*. Study methods used to test the hypothesis are discussed in the following section.

# Study Design

Data regarding producers' organic ethos alignment and perceptions of National Organic Program impacts were collected through a nationwide online survey in the winter of 2013–2014. All domestic certified operations holding any combination of crops, wild crops, and livestock certifications for which the USDA listed a valid email address were included, representing approximately half of all certified organic producers; 6,273 domestic certified organic producers were sent a survey request. Responses were received from 1,055 producers for a response rate of 17%.

While the primary data that the survey provides offer a valuable window into the value orientations and perceptions of U.S. organic producers, several limitations should be noted. The first is that the data are limited to the perspectives of producers

**Table 1.** Expected Relationship Between Producers' Organic Ethos Alignment and Perceived Organic Policy Impacts

Impact Types and Measures	Nature of Impact	Expected Relationship
<i>Environmental impacts</i>		
Improved environmental conditions and biodiversity	Favorable	–
<i>Consumer impacts</i>		
Increased consumer confidence in organic products	Favorable	–
Increased consumer understanding of organic practices	Favorable	–
<i>Market impacts</i>		
A profitable market for organic products	Favorable	–
A deterrent to producers from entering the organic market	Unfavorable	+
Cooptation of the organic market by "big ag"	Unfavorable	+



that perceived enough value in the National Organic Program to become certified USDA organic. The presumably more critical perspectives of producers that have opted out of the program are therefore omitted from our findings. We return to this point in the discussion section. The second is the omission of producers for whom the USDA did not list an email address. The majority of these omissions are due to the fact that at the time of the survey 7 of the 48 certifying agents accredited by the USDA to certify operations did not report producers' email addresses to the USDA. The resulting implication for this study seems to be a less-than-ideal geographic representation of the certified organic producer population, as reported below. Our reliance on an email survey also likely omits the perspectives of certified organic Amish farmers.

The third is the survey's response rate. Farmers are a notoriously difficult population to survey, and a response rate of 17% is consistent with other farmer survey research (Pennings, Irwin, & Good, 2002). However, the low response rate suggests the study findings are susceptible to nonresponse bias. Steps to gauge the survey's vulnerability to nonresponse bias have been well documented elsewhere (Carter, 2016) and are therefore briefly reviewed here. First, a wave analysis was conducted based on the assumption that the answers of survey late responders are more likely to approximate the answers of nonrespondents than those of individuals that readily respond to survey requests. No statistically significant differences between the dependent variable measure responses of different survey waves were found ( $p < .05$ ). Second, 20 nonrespondents were contacted by phone and verbally administered five sample survey questions. Nonparametric tests (due to the extreme difference in group size) comparing these responses with those of the online sample revealed no statistically significant differences ( $p < .05$ ).

Finally, a comparison of respondents' geographic locations, operation sizes, and production characteristics with available USDA data indicates a fair, but not ideal, representation of the U.S.-certified organic producer population. The more evident differences between the sample's organic producers and the population overall are found in producers' locations, with sample underrepresentation of Midwest organic farmers and overrepresentation of those in the Northwest. Midwest producers made up 16% of the survey sample, while accounting for 34% of the population. The highest percentage of survey respondents were from the West (29%; 25% of the population), followed by the Northwest (22%; 12% of the population) and Northeast (18%; 19% of the population). Southeast producers made up 10% of the sample (7% of the population) and Southwest producers made up the remaining 5% (4% of the population). On the basis of reported operation sizes, products produced, and organic certification scopes survey sample characteristics roughly mirrored population trends.

### ***Variables and Construct Measurement***

The variables of interest measured through the survey include producers' program impact perceptions and their alignment with an organic ethos. Perceptions of National Organic Program impacts were measured by having respondents indicate their agreement with the environmental, consumer, and market impact prompts identified in Table 1. Responses were measured on a five-point scale, from "strongly disagree" to "strongly agree."

We conceptualize producers' alignment with an organic ethos as their commitment to core organic principles, and to organic agriculture and the organic movement more generally. Organic ethos alignment was measured with a composite variable, constructed by taking the mean of four measures (see Table 2). The first measure was meant to capture the extent to which producers, themselves, report a close alignment between organic practices and their personal beliefs. The second captures whether producers believe organic practices result in superior products, included to capture sentiments such as Rodale's early assertions that organic methods result in higher quality and more wholesome products (O'Sullivan, 2015). The third captures the extent to which supporting the organic movement is an important factor in producers' decision to pursue USDA organic certification. Finally, the fourth measure captures the extent to which producers perceive USDA organic standards to set a minimum standard that their operation not only meets, but exceeds, in terms of its implementation of organic principles. The composite variable exhibited fair internal consistency with a Cronbach's alpha of 0.65.<sup>3</sup>

Data for several control variables were also collected, to account for how respondents' attributes and the characteristics of their organic operations might influence program outcome perceptions. First, because a producer's perceptions might be shaped by their relative embeddedness in the organic farming community, producers were asked to report the frequency of their interactions with other certified organic producers, from "never" to "daily." Second, because the challenges a producer experiences adhering to regulatory standards also likely influences their program assessments, producers were prompted to indicate the difficulty they experience complying with National Organic Program regulations. Third, because a producer's predisposition toward government likely colors how they gauge the impacts of a regulatory program, producers were prompted to indicate their attitudes toward laws, generally. Finally, respondents were asked to indicate their age (measured through ordinal categories) and gender.

Data pertaining to four organic operation characteristics were collected. As a proxy for characteristics such as operational professionalization and sophistication, an operation size question was included, which asked respondents to characterize

**Table 2.** Organic Ethos Construct Operationalization

Construct	Definition	Measures
Organic ethos	A producer's commitment to core organic principles and the organic movement	<p>Level of agreement that: "I practice organic farming because, compared to conventional practices, it more closely aligns with my personal values"<sup>a</sup></p> <p>Level of agreement that: "I practice organic farming because, compared to conventional practices, it results in superior products"<sup>a</sup></p> <p>Importance of "supporting the organic movement by participating in the National Organic Program" in the decision to be certified USDA organic<sup>b</sup></p> <p>Level of agreement that: "The National Organic Program regulations establish a minimum standard...but my operation goes "above and beyond"<sup>a</sup></p>

*Note:* a = measured by having respondent indicate agreement with the statement; b = measured by having respondent indicate level of importance ascribed to the reason; further details are provided in the Appendix.

their operations “relative to other operations producing similar certified organic products” on a five-point scale from “smallest” to “largest.”<sup>4</sup> A “certification tenure” variable reflects the number of years that respondents’ operations held organic certification. Third, a “handling scope” variable accounts for differences that might exist between operations that have processing and handling capacity, in comparison with their nonprocessing peers. Finally, the state in which each operation was located was also recorded.

### Objective 1 Findings: USDA Certified Organic Producers’ Perceptions of National Organic Program Impacts

This paper’s first objective is to provide a snapshot of how certified organic producers perceive the environmental, consumer, and market impacts of National Organic Program regulations. Descriptive statistics for each of the associated dependent variables provide this snapshot (see Table 3). A single query gauged respondents’ perceptions of the regulations’ environmental impact, and, on average, producers tended to agree that the regulations contribute to improved environmental conditions and biodiversity. Two queries gauged respondents’ perceptions of the regulations’ consumer impacts. While producers tended to agree that the regulations increase consumer confidence in organic products, they were on-average less optimistic in the regulations’ success at increasing consumer understanding of organic practices.

Three queries gauged respondents’ perceptions of the regulations’ market impacts. Overall, results skewed toward producers agreeing that the regulations contribute to market profitability, but also create a barrier to potential market entrants and facilitate market cooptation. The general response to all three measures was notably less than enthusiastic. For example, the mean response to the query asking if the regulations result in profitable organic markets hovered midway between neutrality and agreement. Similar sentiments were found for the queries asking if the regulations deterred producers from entering the organic markets and if the regulations resulted in a cooptation of the organic market by “big ag.”

**Table 3.** Producer Perceptions of National Organic Program Regulation Impacts

	Mean	SD	Min	Max
<i>Environmental impacts</i>				
Improved environmental conditions and biodiversity	0.85	0.87	-2	2
<i>Consumer impacts</i>				
Increased consumer confidence in organic products	1.02	0.75	-2	2
Increased consumer understanding of organic practices	0.37	1.03	-2	2
<i>Market impacts</i>				
A profitable market for organic products	0.47	0.95	-2	2
A deterrent to producers from entering the organic market	0.49	1.04	-2	2
Cooptation of the organic market by “big ag”	0.44	0.94	-2	2

*Note:* Values represent mean agreement, measured on a five-point scale from “strongly disagree” to “strongly agree,” that the National Organic Program regulations result in each of the listed impacts.

## Objective 2 Findings: The Organic Ethos and Perceptions of Organic Policy Impacts

This paper's second objective is to assess the extent to which producers' perceptions of organic policy impacts may be shaped by their alignment with an organic ethos. A series of multiple regressions were performed to assess evidence of the relationship—one for each of the six dependent variables.<sup>5</sup> The analyses included fixed effects by region (seven U.S. regions), to account for systematic differences in regional organic markets, industries, and cultures.<sup>6</sup> The aforementioned respondent and operational control variables were also included, to account for how producers' characteristics, as well as those of their organic operations, might influence their policy impact perceptions. The results are reported in Table 4.

Our overall hypothesis was that the more closely producers align with an organic ethos, the less likely they are to perceive favorable organic policy impacts and the more likely they are to perceive unfavorable policy impacts. The first part of the hypothesis was directly contradicted across the four organic policy impact measures that reflected favorable policy outcomes. Analysis findings indicate that the higher a survey respondent's exhibited organic ethos value, the *more* likely the respondent was to report that National Organic Program regulations directly result in improved environmental conditions, increased consumer confidence in organic products, increased consumer understanding of organic practices, and a more profitable market for organic products. All relationships are statistically significant at the  $p < .01$  or  $p < .05$  levels.

The second part of the hypothesis—that the more closely producers align with an organic ethos, the more likely they are to perceive unfavorable policy impacts—was supported in the case of one of the two measures reflecting unfavorable policy outcomes. Supporting the hypothesis, findings indicate that the higher a survey respondent's exhibited organic ethos value, the more likely the respondent was to report that the National Organic Program regulations directly resulted in the organic market cooptation by “big ag.” The relationship is statistically significant at  $p < .01$ . In contrast, producers' organic ethos alignments did not exhibit a statistically significant relationship with their perceptions regarding whether the National Organic Program regulations created a deterrent to producers otherwise likely to pursue USDA organic certification.

The relationships that several control variables shared with policy impact perceptions are worth noting. Results indicate that the greater difficulty respondents' experience complying with the National Organic Program regulations, the more likely they are to perceive the regulations as creating a deterrent to potential organic market entrants and facilitating organic market cooptation. Respondents' predisposition toward laws is positively related to perceptions of favorable policy environmental and consumer confidence impacts, as well as the regulations' contribution to a profitable organic market. Older respondents were more likely to report both positive environmental and consumer policy impacts, while respondents from longer certified operations were less likely to perceive positive environmental impacts. Finally, respondents from larger operations were less likely to report that the regulations create a deterrent to potential organic producers or facilitate market cooptation by “big ag.”

**Table 4.** The Relationship Between Producers' Organic Ethos Alignment and Perceptions of Organic Regulation Impacts

	Environmental		Consumer		Market	
	Improved Environment	Consumer Confidence	Consumer Understanding	Profitable Market	Deterrent to Entry	Market Cooptation
Organic ethos	0.05(0.04)***	0.13(0.04)***	0.39(0.06)***	0.12(0.05)**	-0.02(0.06)	0.30(0.05)***
Respondent characteristics						
Community	0.02(0.03)	0.02(0.03)	0.02(0.04)	0.06(0.03)*	0.01(0.04)	-0.02(0.03)
Interactions						
Regulatory difficulty	0.02(0.03)	-0.03(0.03)	-0.02(0.04)	-0.03(0.04)	0.30(0.04)***	0.08(0.03)**
Predisposition toward laws	0.10(0.03)***	0.06(0.03)**	0.06(0.04)	0.13(0.04)***	-0.04(0.04)	0.05(0.03)
Age	0.10(0.02)***	0.07(0.02)***	0.09(0.03)***	0.03(0.03)	-0.04(0.03)	-0.03(0.03)
Female	0.04(0.06)	-0.05(0.02)	-0.19(0.08)**	-0.04(0.08)	0.07(0.08)	-0.08(0.07)
Operation characteristics						
Certification tenure	-0.02(0.01)**	-0.00(0.01)	-0.01(0.01)	-0.01(0.01)	-0.00(0.01)	0.01(0.01)
Operation size	-0.03(0.03)	0.06(0.03)*	-0.00(0.04)	0.07(0.04)*	-0.12(0.04)***	-0.16(0.04)***
Handling scope	-0.00(0.07)	-0.04(0.07)	0.08(0.10)	0.06(0.09)	-0.04(0.10)	0.00(0.09)
Constant	0.08(0.16)	0.46(0.16)***	-0.33(0.22)	-0.09(0.20)	1.10(0.22)***	0.79(0.19)***
Observations	745	747	747	746	745	730
R-squared	0.26	0.04	0.08	0.04	0.10	0.09

Note: Fixed effect by U.S. region ( $n = 7$ ); Standard errors in parentheses.

\*\*\*  $p < .01$ ; \*\*  $p < .05$ ; \*  $p < .1$ .

## Discussion

This paper first set out to document certified organic producers' assessments of several contested impacts of U.S. organic policy. Our results conform to several widespread assumptions concerning the organic market, while contradicting others. Our findings suggest that, generally speaking, producers perceive National Organic Program regulations to encourage environmentally friendly agricultural outcomes and increase consumers' confidence in foods marketed as organic. The fact that producers appeared to feel most strongly about the regulations' support of consumer confidence is encouraging news for the program, given that a central rationale for government-sponsored regulations under the Organic Foods Production Act of 1990 was to improve consumer confidence by establishing and enforcing national organic standards (Guthman, 2014; Mosier, 2017).

Perceptions that the regulations result in improved environmental conditions and biodiversity is perhaps somewhat surprising, given widespread criticisms that the principle of sustainability has been severely eroded under the USDA's oversight (Arcuri, 2015; Obach, 2015). The relationship between respondents' age and the perception observed in the analysis findings may shed some light on the result. The U.S. organic market has only been regulated by national standards since 2002, after twelve years of rule development by the National Organic Standards Board. Older survey respondents likely remember the emerging unregulated organic market of the 1960s and 1970s. Moreover, older respondents are also more likely to recall the patchwork of regulations that emerged in the late 1980s to correct for decades of fraud in the marketplace that contributed to consumer confusion and mistrust. As a result, a potential explanation for why perceived environmental policy impacts are positive rests with experiences older producers accrued over time.

The "lukewarm" nature of producers' assessment that the regulations increase consumer understanding of organic practices is less surprising. A considerable body of consumer behavior research documents that while consumers readily distinguish between certified-organic and conventional products, they rarely have a good grasp of what organic certification stands for beyond general conceptions of "natural," "synthetic-free," or "local" (Abrams, Meyers, & Irani, 2010; Adams & Salois, 2010; Yiridoe et al., 2005). Studies even suggest that this ignorance extends to clearly false interpretations of the organic label, such as that organic certification is an appropriate proxy for nutritional value assessment (Eden, 2011). Furthermore, the multiplicity of overlapping claims from parallel or competing certification programs, such as certification for GMO-free products, likely adds to the difficulty consumers encounter in understanding the practices the organic label represents (Brécard, 2014).

The mixed perceived impacts of National Organic Program regulations on the organic market found in this study appear reflective of tensions inherent in maintaining and growing an alternative or sustainable agricultural industry (Obach, 2015). After all, it can only be expected that if a public policy successfully encourages a market, as producers' responses here provide measured indication of in the case of organic, then established and even dominant industrial players will seek to also benefit from it. The degree to which the entrance of conventional agribusiness firms in organic markets extends to a "watering down" of organic standards is beyond the scope of this paper. Nonetheless, the fact that this study found simultaneous (although



notably measured) support for the dual claims—that the regulations impede potential entrants to the organic market and have facilitated its cooptation by conventional agribusiness—suggests that many producers may be in agreement that the regulations favor the more powerful conventional agriculture interests at the cost of smaller operations that characterized early organic pioneers (Guthman, 2014; Jaffee & Howard, 2010; Mosier, 2017).

Beyond measuring organic producers' perceptions regarding the environmental, consumer, and market impacts of National Organic Program regulations, this paper examined the extent to which such perceptions are likely shaped by producers' values and beliefs toward organic practices. The findings suggest a relationship between producers' organic ethos alignment and their organic policy impact perceptions—but, with one exception, not the relationship expected. Instead of being negatively associated with favorable policy impacts, as anticipated, the closer a producer's alignment with an organic ethos, the more likely the producer was to report favorable National Organic Program impacts.

One explanation for the finding is that our assumption regarding organic producers' suspicion and distrust for the USDA and conventional agriculture is misplaced or overstated. While we based the assumption on concerns and perspectives voiced across popular (Charles, 2014; Haspel, 2014) and scholarly (Guthman, 2014; Mosier, 2017; Obach, 2015) outlets, it could be that such accounts represent the views of the most extreme positions and are simply not shared by the majority of the certified organic producer cohort. This explanation gains traction when the limitations of our sample are considered. Our survey omits the policy impact assessments of producers that practice organic methods but have voluntarily opted out of USDA organic certification. It is likely that incorporating these perspectives would result in less favorable descriptive findings regarding National Organic Program outcomes. Furthermore, assuming noncertified organic producers exhibit a close alignment with an organic ethos and less favorable assessments of organic policy impacts, it is possible our analysis findings may have more closely approximated our theoretical expectations.

The aforementioned explanation is consistent with the policy theory literature upon which our expectations were built. If it is the case that USDA certified organic producers feel a commitment to the National Organic Program after “buying in” through certification, the explanation further conforms to the idea that producers' beliefs and values drive them to “double down” on the favorable perceptions that motivated them to participate in the program in the first place. To the extent there exists an endogenous, interactive relationship between values and perceptions, favorable perceptions might then be expected to drive even stronger organic ethos-associated beliefs. The cross-sectional nature of our survey data precludes us from examining such endogenous and self-reinforcing dynamics between personal values and program perceptions, but the likelihood of at least *some* effects suggest they warrant future examination.

An alternative explanation is also possible, however, which questions the blanket applicability and influence of cognitive mechanisms such as confirmation bias and attitude polarization. It could be that producers closely aligned with an organic ethos feel more invested in organic policy, and therefore report stronger program perceptions, but that the values and beliefs that comprise their organic ethos alignment do

not shape the direction of their belief in terms of favorable or unfavorable perceptions. The explanation suggests that, in the case of USDA certified organic producers, personally held values shape the intensity of policy impact perceptions, but not the nature of them. The explanation helps to explain an apparent contradiction in the findings—that relative to their more instrumental peers, producers closely aligned with an organic ethos perceive the National Organic Program to be more effective in environmental, consumer, and market perceptions *and simultaneously* perceive it to be more coopted by conventional agribusiness. The proposition offers an opportunity for future research examining the nature and scope of how personal values do, and do not, shape policy impact perceptions.

An additional aspect of the findings warrants discussion. While producers' alignment with an organic ethos exhibited positive relationships with the National Organic Program's environmental impacts, consumer confidence in and understanding of organic agriculture, and organic market profitability, the strength of these relationships is not uniform. Instead, coefficient sizes indicate that the relationship between organic ethos alignment and environmental impact perceptions is relatively weak, while its relationship with increased consumer understanding of organic practices and market cooptation by "big ag" seem to be relatively strong. The finding is difficult to interpret.

We offer one possible explanation. Our expectation that an organic ethos alignment would be negatively associated with perceptions of increased understanding assumed that producers' responses would be shaped in part by their suspicion or distrust in the USDA. It is possible that producers' responses are instead more impacted by their experiences with, and perceptions of, consumers. For example, if it is the case that producers more closely aligned with an organic ethos are more likely to interact with and educate their consumers, they may perceive those consumers to be more competent in organic methods, relative to their instrumentally oriented peers. Consistent with the explanation, the higher perceptions of market cooptation held by producers closely aligned with an organic ethos may be reflective of a view of conventional agribusinesses as "the other," while more instrumentally oriented producers have greater exposure to such operations—or are more likely to be them. Regardless, the finding is notable and worthy of further investigation.

### ***Limitations and Caveats***

These findings should be considered with recognition of several study limitations. Perhaps most evident are our data and operationalizations. First, the policy impacts studied here are limited to three broad categories of environmental, consumer, and market impacts, which leaves out a range of other possible policy outcome perceptions. Future scholars, for example, should consider incorporating animal welfare, consumer health, worker health and well-being, and market growth measures, among other additional impacts. Similarly, our operationalization of environmental and biodiversity impact is limited to a single compound measure, which prevents analysis of differential impacts between the two, if any exists.

Furthermore, in conceptualizing producers' values we used a construct variable to measure producers' relative alignment with an "organic ethos." The approach

appropriately allowed us to synthesize producers' normative positions to facilitate analysis of their relationship with policy impact perceptions but did so at the cost of simplifying values that are in practice multidimensional and nuanced. For example, the approach can be seen as positioning producers along a spectrum as more-or-less "organic," when, in fact, many producers are likely committed to organic principles and at the same time see the USDA organic standards as a good (if imperfect) translation of those principles to scalable organic practices. Future research may benefit from applying more conceptually and analytically nuanced measures of producer values.

An additional study limitation is grounded in our inability, from study methods, to understand how survey respondents gauged and conceptualized organic policy impacts on the basis of our abstract survey prompts. No procedures were present, for example, to evaluate how or to what extent respondents were informed about the nature of National Organic Program outcomes. While we recognize this as a limitation, we do not gauge it to be a fatal one. After all, the study is grounded in the premise (and research showing) that even when facts are present, individuals struggle to reconcile facts with their preconceived assumptions and notions, and that beliefs, morals, and values often hold greater sway over perceptions than more objective evidence. Indeed, the findings of this study contribute further evidence to the general lesson that individuals' beliefs and values shape the manner in which they process and evaluate empirical outcomes (Hochschild, 2001).

Finally, the study sample upon which our findings rely represents both a strength and a limitation, including and beyond the reasons discussed above. Producers provide a distinctive perspective on the successes and limitations of agricultural policies. In many ways, organic producers have an insightful vantage point from which to gauge the impacts of organic food policy. Nonetheless, their evaluations are perceptions, and as this paper has illustrated, should not be construed with objective data regarding policy impacts. Furthermore, the study is limited in its geographical scope to an examination of U.S. organic policy impacts from the perspective of U.S. organic producers. Producer perceptions are integral aspects of organic governance, however, and should be a central concern to agricultural policy makers. After all, as a quasi-voluntary program in most countries around the world, organic certification and the market it enables can only succeed if producers view it favorably enough to surmount the barriers necessary to market and sell their products as organic.<sup>7</sup>

## Conclusion

As the organic market continues to grow and debates regarding the appropriateness and impacts of alternative agriculture programs presumably persist, so too does the need for better understanding of the producer, consumer, and market impacts of organic policy. This paper contributes to the collective understanding of organic policy impacts and demonstrates the benefit of applying policy theory to identify the factors that shape organic policy impact perceptions. First, through a descriptive snapshot of how USDA-certified organic producers assess the environmental, consumer, and market impacts of the National Organic Program, the paper indicated that producers perceive the program to have positive impacts on environmental

health, organic food consumer confidence and (to a lesser degree) understanding, and organic market profitability. At the same time, the results suggest some producers also perceive the program as creating barriers to potential organic certification applicants and facilitating market cooptation by “big ag” competitors.

Second, the paper investigated the relationship between producers’ organic ethos alignment, understood as relative commitment to organic principles and the organic movement, and their National Organic Program impact perceptions. The findings indicate relationships exist between organic ethos alignment and organic policy impact perceptions, but not always in the way expected. While a closer alignment with an organic ethos was positively associated with perceptions that the program facilitates organic market cooptation by “big ag,” as anticipated, the findings countered our predictions by indicating a positive association between organic ethos alignment and favorable environmental, consumer, and market policy impact perceptions. We outlined several explanations for the findings, offering propositions through which future research can further contribute to both an understanding of contemporary organic policy debates and the manners in which individual values shape how program participants evaluate policy outcomes.

Collectively, the study’s findings hold both theoretical implications for the scholarly understanding of agricultural policy processes and policy-relevant implications for agricultural industry practitioners and policy makers. Theoretically, the study findings highlight how the underlying values agricultural producers hold likely shape how they perceive, evaluate, and regard policies and programs that intervene in agricultural markets. Substantively, the findings help explain some of the divergence that is observed regarding the success of organic food programs at promoting environmental sustainability, consumer education and confidence, and robust organic foods markets. Continued research examining the relationship between practitioner values and policy impacts thus holds the potential for not only a better understanding of agricultural policy dynamics, but may shed light on how such programs can be best evaluated and improved to successfully meet programmatic goals.

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## Notes

- 1 Natural is a term that is not regulated to the same extent as organic. In its use here, natural refers to the connotation of being from the earth or not drastically manipulated by humans (such as bioengineering).
- 2 The “big three” controversy may have served as a mobilization tactic for organic advocates seeking to change other contested elements of the proposed rule (Haedicke, 2016). Other contended elements include: Omission of key concepts such as ecosystem health and biodiversity from the definition of organic; substitution of NOSB organic standards recommendations with those from the USDA; overly lax livestock production standards; loopholes that would allow never-before used synthetic materials in organic production; removing certifiers’ authority to decertify operations, leaving decertification up to

- the sole discretion of the USDA; and omitting land history from certification requirements, potentially allowing contaminated soils in organic production.
- 3 Because the organic ethos Cronbach's alpha falls below Nunnally and Bernstein's (1967) guideline of 0.70, sensitivity tests were run, including iteratively omitting each of the measures from the composite variable. We found that dropping the measure regarding practices that go above-and-beyond the USDA organic minimum standard improved the alpha somewhat, raising it to 0.71. We were reluctant to drop the measure, however, because it arguably reflects higher construct validity with our conceptual definition of an organic ethos than alternatives. Importantly, replacing the four-measure composite variable with three-measure alternatives had no notable impact on study findings. Given the lack of substantive difference in study findings and the fact that lower Cronbach's alpha scores are often expected in the case of new scale developments (Lewis & Loewenthal, 2015) and used in practice (Andrews, Boyne, Law, & Walker, 2007), we deemed it appropriate to proceed with the reported four-measure composite variable.
  - 4 We recognize that the operationalization of operation size is less than ideal. Given the immense variation of agricultural operations—ranging from tree fruit producers to livestock-only operations—we found that simply asking producers about the size of their operation relative to their competitors, albeit limited, the simplest way to capture relative size in a single question.
  - 5 The number of observations drops considerably from the overall survey  $n$  of 1,055 due to missing values on one or more of the measures included in the analyses.
  - 6 Standard regression diagnostics were performed (e.g., for multicollinearity and heteroscedasticity), raising no concerns. The following robustness check and alternative model specifications warrant mention: First, ordered logit analyses were performed due to the ordinal nature of the dependent variable, with results consistent with reported findings. Second, separate analyses were run with fixed effects by U.S. state, and then according to ten USDA-defined U.S. farm production regions, instead of the general region operationalizations seen in this paper. The results of both analyses were consistent with the reported findings. Finally, nonlinear relationships between the dependent variables and two independent variables (operation size and certification tenure) were tested (through categorical independent variables and quadratic terms), and no notable differences were found between those results and the reported findings. The reported findings were preferred in the interest of parsimonious modeling.
  - 7 We refer to organic certification as “quasi-voluntary” because in many countries operations may only use the term organic if they are certified under a recognized program, such as the USDA's National Organic Program. Certification is therefore mandatory if the operation wishes to market and sell products as organic, but operations can opt out of program participation by using an alternative label such as “natural” or “sustainable.”

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Appendix

Table A1. Variable Operationalizations and Descriptive Statistics

Variable	Mean	SD	Min	Max	Operationalization
<i>Dependent variables</i>					
Improved environment	0.85	0.87	-2	2	Level of agreement that "The National Organic Program regulations directly result in improved environmental conditions and biodiversity"; -2 = strongly disagree, 2 = strongly agree
Increases consumer confidence	1.02	0.75	-2	2	Level of agreement that "The National Organic Program regulations directly result in increased consumer confidence in the integrity of products marketed as organic"; -2 = strongly disagree, 2 = strongly agree
Increased consumer understanding	0.37	1.03	-2	2	Level of agreement that "The National Organic Program regulations directly result in increased consumer understanding of the difference between organic and conventional products"; -2 = strongly disagree, 2 = strongly agree
Deterrent to entry	0.49	1.04	-2	2	Level of agreement that "The National Organic Program regulations directly result in potential organic producers opting out of program participation due to burdensome certification requirements"; -2 = strongly disagree, 2 = strongly agree
Profitable market	0.47	0.95	-2	2	Level of agreement that "The National Organic Program regulations directly result in a profitable organic market for my products"; -2 = strongly disagree, 2 = strongly agree
Market cooptation	0.44	0.94	-2	2	Level of agreement that "The National Organic Program regulations directly result in co-optation of the organic market by 'big ag'; -2 = strongly disagree, 2 = strongly agree
<i>Independent variable measures</i>					
Organic ethos (composite)	0.92	0.72	-2	2	Mean of value of four following measures
Organic ethos measure: Aligns with values	1.42	0.90	-2	2	Level of agreement that "I practice organic farming because, compared to conventional practices, it more closely aligns with my person values"; -2 = strongly disagree, 2 = strongly agree
Organic ethos measure: Superior products	1.04	0.99	-2	2	Level of agreement that "I practice organic farming because, compared to conventional practices, it results in superior products"; -2 = strongly disagree, 2 = strongly agree
Organic ethos measure: Support organic movement	0.38	1.30	-2	2	Level of importance in "supporting the organic movement by participating in the National Organic Program" as a factor in the decision to be certified USDA organic. -2 = not at all important, 2 = extremely important
Organic ethos measure: Operation goes above and beyond	0.80	0.91	-2	2	Level of agreement that "The National Organic Program regulations establish a minimum standard for organic practices, but my operation goes 'above and beyond'; -2 = strongly disagree, 2 = strongly agree
Organic community interaction	2.96	1.49	1	5	Reported frequency of interactions with other certified organic producers; never = 1, yearly = 2, monthly = 3, weekly = 4, daily = 5
Regulatory difficulty	-0.54	1.01	-2	2	Level of agreement that "Maintaining compliance with the National Organic Program regulations is extremely difficult"; -2 = "strongly disagree," 2 = "strongly agree"
Predisposition toward laws	0.01	0.97	-2	2	Level of agreement that "The more a society is structured by formal laws, the better it functions"; -2 = strongly disagree, 2 = strongly agree
Age	4.40	1.17	1	6	Ordinal measure of age; 1 = under 25; 2 = 26-35; 3 = 36-45; 4 = 46-55; 5 = 56-65 6 = over 65
Female	0.30	0.46	0	1	Reported gender; male = 0, female = 1
Certification tenure	7.19	3.62	0	11	Years operation held organic certification
Operation size	2.57	0.93	1	5	Reported operation size: 1 = smallest, 2 = small, 3 = average, 4 = large, 5 = largest
Handling scope	0.15	0.35	0	1	Operation holds USDA organic certification for processing and handling