OREGON FOOD PROCESSORS' ATTITUDES TOWARD PROCESSING CERTIFIED SUSTAINABLE FRUITS AND VEGETABLES

By

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FRUITS AND VEGETABLES

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CHAPTER I

INTRODUCTION

Background and Setting

Agriculture in the United States continually employs new practices to meet buyers' demands, adjust to governmental regulations, and produce crops more efficiently. In recent years, there has been a push for environmentally friendly production of the nation's and the world's food supply with such legislation as the Organic Foods Production Act of 1990, which established criteria for marketing foods as organic in the U.S. (United States Department of Agriculture, 2005). In 2002, the United States Department of Agriculture (USDA) established the National Organic Program and the USDA organic label (United States Department of Agriculture, 2002b) to further standardize the production and labeling of organically produced foods.

While organic sales in the U.S. have experienced rapid growth in the last 10 years (Cooperative Development Service, 2006), other eco-labeling programs have come onto the scene, many of which are administered by non-governmental organizations. These labels, which include "fair trade," "locally grown," "all natural," "GE Free," and "sustainable" (Fairtrade Labelling Organizations International, 2006; Getz & Shreck, 2006; Harris, 2007), each inform the consumer about different characteristics of the production and/or processing of the product (e.g., pest control practices used, where the product was grown, makeup of product ingredients, etc.). With several eco-friendly

labels, farmers and their buyers must make decisions about whether to seek certification and what certification to seek.

As with much of the U.S., in the Northwest, sustainable agricultural practices receive regular publicity in the news media (Gaudette, 2007; Leson, 2007; Pokorny, 2007; Watson, 2007). With headlines such as "Easy Organics: Just a small shift in habits pays off" (Pokorny), "Area Businesses Showing Green Leadership" (Watson), "Eco-friendly Eateries Look Beyond the Menu" (Gaudette), and "How Green is My Diet? At Home or Dining Out, We Can All Do Better" (Leson), consumers have access to information about those who embrace sustainable practices, and writers, whether news or opinion, praise their "green leadership." Like businesses throughout the country, one way Northwest businesses have shown their eco-friendliness is by seeking sustainable certification.

In 1997, Food Alliance, a sustainable certifying agency, was incorporated as a non-profit organization. Originally established in 1993 through a cooperative effort with Oregon State University, Washington State University, and the Washington State Department of Agriculture, Food Alliance began its certification program in 1998 with a single grower. Today, more than 250 farms and ranches operate with Food Alliance certification (Food Alliance, 1997a). Among the certified agricultural products are processed fruits and vegetables.

While some research has been conducted regarding consumers' opinions and shopping habits relative to certified sustainable products, little research has been done specifically addressing the opinions of decision makers at food processing facilities, which must also be certified to process food sold with a certified sustainable label.

Statement of the Problem

In 2002, Oregon's fruit and vegetable sales (including melons, tree nuts, berries, potatoes, and sweet potatoes) were valued at $631 million with direct-market sales valued at $21 million (United States Department of Agriculture, 2002a). While the fruit and vegetable sales were inflated because of the inclusion of nuts, the direct-market sales accounted for products other than fruits and vegetables, so the conclusion can still be made that the majority of Oregon's fruits and vegetables were sold to a processing facility before reaching the consumer. The United States Department of Agriculture (2002a) reported that 75% of Oregon's vegetable acres were harvested for processing.

In a study comparing conventional and alternative agriculturalists, J. C. Allen and Bernhardt (1995) found all groups, regardless of their level of conventional or sustainable production, held the views that farming should be conducted as a business. That is, farming should aim, like other businesses, to generate profits. Their findings were confirmed by Carolan (2006) who found farmers who have adopted sustainable agricultural practices want to protect the environment and work to reduce their use of chemicals, but if sustainable practices were not profitable, they may not continue.

The process of certification can be time consuming and costly to farmers depending on what adjustments must be made to their operations to meet certification standards. Since processors must be certified for foods to be sold to the consumer as certified sustainable, and the majority of Oregon's fruits and vegetables are sold to processors, farmers need information about processors' attitudes toward and perceptions about the sustainable certification process. If food processors do not have a positive attitude toward processing certified sustainable products and do not plan to increase their

capacity to process certified foods, it might not be financially viable for producers who are not currently certified to seek certification. Farmers need to understand the level of demand from processors to make profitable farm management decisions, and one of the first steps in determining that demand is determining processors' attitudes toward processing certified sustainable products.

Purpose of the Study

The purpose of this study was to determine Oregon food processors' attitudes toward promoting and expanding production of processed certified sustainable fruits and vegetables.

Objectives of the Study

To accomplish the purpose of this study, the following objectives were established:

Objective 1

Determine whether fruit and vegetable processors are committing financial resources to marketing certified sustainable fruits and vegetables.

Objective 2

Evaluate food processors' attitudes toward sustainable agriculture.

Objective 3

Evaluate processors' attitudes toward the sustainable certification process.

Objective 4

Evaluate processors' perceptions about what their competitors are doing with regard to processing certified sustainable fruits and vegetables.

Objective 5

Determine processors' perceptions of the benefits, drawbacks and incentives to promote and process certified sustainable fruits and vegetables.

Limitations of the Study

Sustainable agriculture research has approached issues of sustainability from different angles, primarily looking at environmental, economic, or social characteristics, or combinations thereof (P. Allen, Van Dusen, Lundy, & Gliessman, 2000, June). This study aimed to shed light on the direction food processors are moving with regard to certified sustainable fruits and vegetables. The information gathered was intended to help farmers, who sell produce to food processors, make management decisions related to pursuing sustainable certification. Therefore, the underlying values of this study were economic and did not address the environmental or social implications of certified sustainable foods.

The theory of planned behavior, which is discussed in detail in Chapter II, asserts that if three factors related to a behavior — attitude, subjective norms, and perceived behavioral control — can be measured, the person's likelihood of carrying out that behavior can be measured (Ajzen, 1991). This study focused on determining the populations attitudes toward the behavior and is therefore limited by the fact that it does not address the other two components of the theory of planned behavior.

Assumptions of the Study

This study approached questions about certified sustainable food processing with the assumption that farmers desire more information about food processors' interests in and demand for certified sustainable foods. It also assumed the importance of preserving the profitability and longevity of the farms that currently sell fruits and vegetables to the processors studied.

Significance of the Study

To date there was no research found that specifically addressed food processors' attitudes toward sustainable certification. This study focused on providing information to farmers that was not previously available regarding their buyers' attitudes toward certified sustainable fruits and vegetables. This information will give farmers some of the details they need to have a clear understanding of the direction their buyers are likely to move in the future.

Definition of Terms

Certified Sustainable: Food processor that has passed inspection by a third-party certifying agency based on standards of product purity and nutritional value, quality control and food safety, water and energy resource management, waste management, safe and fair working conditions, and commitment to continuous improvement of these practices (Food Alliance, 1997a).

Eco-label: “identifies environmentally preferable products based on an environmental-impact assessment of the product compared to other products in the same category” (McCluskey & Loureiro, 2003, p. 95)

Fruit and Vegetable Processor: food processor whose primary activity is recorded as processing fruits and vegetables, as identified by the Oregon Department of Agriculture, or one who is listed in the Judges 2006 Food Processors of North America Guide as a fruit and vegetable processor.

Fruit and Vegetable Producer: any farmer who sells fruit and/or vegetables to a fruit and vegetable processor (as defined above).

Sustainable agriculture: An integrated system of plant and animal production practices having a site-specific application that will, over the long term, satisfy human food and fiber needs; enhance environmental quality and the natural resource base upon which the agricultural economy depends; make the most efficient use of nonrenewable resources and onfarm resources and integrate, where appropriate, natural biological cycles and controls; sustain the economic viability of farm operations; and enhance the quality of life for farmers and society as a whole. Examples of sustainable agricultural practices include use of crop rotation, animal and green manures, soil and water conserving tillage systems such as no-till planting methods, and integrated pest management (Agriculture Dictionary Online, n.d.; United States Department of Agriculture, 2005).

Sustainable Certification Process: Process toward achieving certified sustainable status as defined in this study.

CHAPTER II

REVIEW OF LITERATURE

Introduction

The literature review provided background information to this project by synthesizing existing research in the topic area. The theoretical framework provided a guide to designing the study and later to the conclusions drawn from data collected. In this chapter, research associated with sustainability, sustainable agriculture, food labeling, third-party certification, sustainable certification, the grower perspective, and the consumer perspective as well as information about Oregon processed fruits and vegetables is summarized. The existing literature pointed to gaps in knowledge, which shaped the purpose and objectives of this study.

Theoretical Framework

To make effective recommendations about whether Oregon farmers should pursue sustainable certification, it is imperative to determine the intentions of those growers' markets. Many of Oregon's fruit and vegetable growers sell to food processors, rather than direct-marketing their produce (United States Department of Agriculture, 2002a). Therefore, this study surveyed fruit and vegetable processors to gather information that could help determine the direction, with regard to sustainable certification, in which those processors are moving.

The theory of planned behavior guided this study. This theory extends the ideas of the theory of reasoned action to include the perceived behavioral control component (Ajzen, 1991). The theory of planned behavior asserts that perceived behavioral control and behavioral intention, determined by three factors — attitude toward the behavior, subjective norms related to the behavior, and perceived behavioral control — can predict a person's actual behavior (Ajzen, 1991). Additionally, the constructs of behavioral beliefs, normative beliefs, and control beliefs affect a person's attitude, subjective norms, and perceived behavioral control, respectively (Aizen, 2006). See Figure 1 for an illustration of this theory.

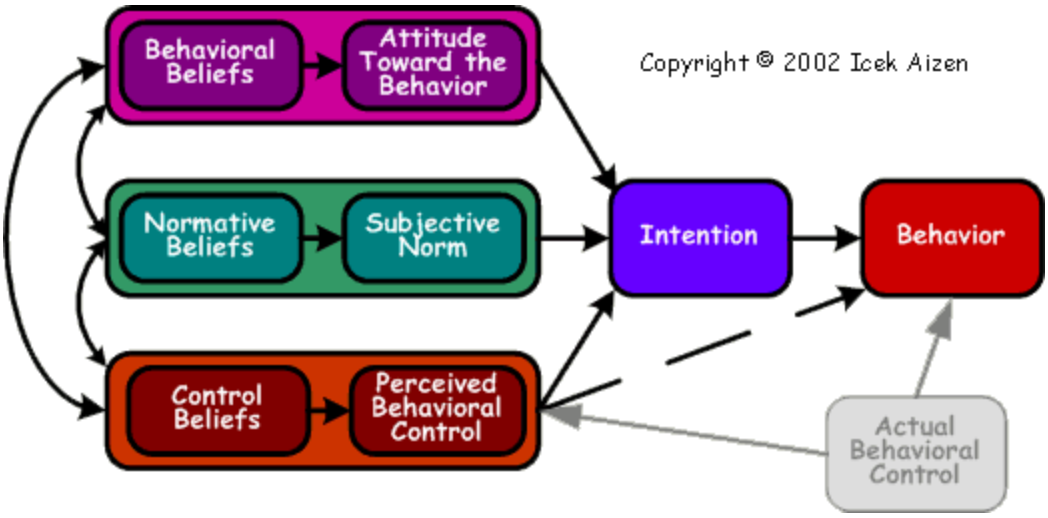

Figure 1. Model of the theory of planned behavior, which uses attitudes, subjective norms, and perceived behavioral control to predict a person's intention to carry out a specified behavior (Aizen, 2006). Reprinted with permission.

While no studies were found that addressed food processors' actions or attitudes related to certified sustainable foods, several researchers have used the theories of reasoned action and planned behavior to guide studies related to consumers' and growers'

behaviors regarding sustainable and organic foods (Chodil, Irani, & Meyers, 2007; Chodil, Meyers, Irani, & Telg, 2007; Fraj & Martinez, 2007; Hattam, 2006).

This study focused on gathering data related to Oregon fruit and vegetable processors' *attitudes toward* the behavior of processing and promoting certified sustainable fruits and vegetables, one of the three components that, according to the theory of planned behavior, contribute to the intention to act. By evaluating those processors' attitudes, this study began the process of determining whether Oregon fruit and vegetable processors intend to process and promote the production of certified sustainable fruits and vegetables.

Sustainability

In recent decades, the United States has seen an increase and urgency in the sentiment among its people to remedy the mistakes of the past with solutions for the future. Moving forward with sustainable development was declared a priority by the United Nations at its Conference on Environment and Development (as cited in Lewandowski, Härdtlein, & Kaltschmitt, 1999). Sustainability has been the topic of news stories (Gaudette, 2007; Gonzalez, 2007a, 2007b; Leson, 2007; Watson, 2007), documentaries (Guggenheim, 2006), presidential addresses (Bush, 2007, 2008), and platforms among the 2008 presidential candidates (Clinton, n.d.; McCain, n.d.; Obama, n.d.). Alternative energy sources for homes, vehicles, and power; recycling; and an emphasis on renewable resources are but a few examples of the key points of this "green revolution." Such a broad concept, sustainability can be defined in many ways. Harris (2007) offers this definition, "as a minimum, operations occur in a way that does not lead

to the permanent degradation of the environment, including consideration of permanent, irreversible, cumulative, and severe temporary effects" (p. 52). Amid the sustainability discussion, the agriculture industry has been put front and center, which has led to the need for research, regulation, and definition within the sustainable agriculture sector (P. Allen et al., 2000, June; Earles, 2005; Harris, 2007; Lewandowski et al., 1999).

Sustainable Agriculture

P. Allen et al. (2000, June) emphasized the need to continue discussions about the definition of sustainable agriculture as a prerequisite for actually implementing sustainable practices, asking "How can we form an improved agricultural system if it has not yet been clearly conceptualized?" (p. 1). One of the key points of contention among the various definitions of sustainable agriculture has been the purpose of sustainable practices. The purpose has been described as solving environmental, social, or economic issues to varying degrees and in different combinations in research, production, and policy (J. C. Allen & Bernhardt, 1995; P. Allen et al., 2000, June; Earles, 2005; Klonsky & Livingston, 1994). Lewandowski et al. (1999) said agriculture's dependence on natural resources makes the ecological perspective the natural starting place for defining sustainable agriculture. According to those authors, once the ecological factors have been addressed, social and economic implications can be discussed and incorporated into the definition to provide a viable solution that addresses all aspects of sustainable agriculture.

P. Allen et al. (2000, June) summarized a number of definitions of sustainable agriculture and pointed to the vast differences among them regarding focus and priority. The common thread among the definitions was increasing environmental conservation

while maintaining farmers' profits, which the authors claim might be too narrow a focus. "They challenge some but not all of the assumptions that underlie agriculture's non-sustainable aspects, generally neglecting questions of equity or social justice" (P. Allen et al., 2000, June, p. 2).

While there is no universally agreed upon definition of sustainable agriculture at this point, government organizations as well as non-governmental organizations (NGO's) have developed programs, strategies, and policies to encourage environmentally friendly practices (National Organic Program, 2002; Sustainable Agriculture Network, 2008). The broad concept of sustainable agriculture has been used to include a number of more specific programs including organic, all natural, soil and water conservation, and integrated pest management (IPM) efforts (Earles, 2005; Parks, 2007; Sustainable Agriculture Network, 2008).

Food Labeling

As producers and others involved in the chain from farm to fork have adopted eco-friendly practices, labels offer a way to distinguish the attributes of competing products at the point of purchase (Caswell, 1998; Golan, Kuchler, & Krissoff, 2007, November). Caswell (1998) recognized labeling foods as a means to voluntarily distinguish a product from its competition, or to enforce government regulation related to specified production and processing practices. Caswell (1998) identified the use of food labels as a means to transform credence attributes, those that a consumer cannot distinguish by looking at or even using the product, to search attributes, those a consumer can identify and evaluate before purchasing. Since food labels provide information

directly to consumers and therefore affect market place choices, much of the research in this field has focused on consumers' choices and often their willingness to pay for specific food attributes (Caswell, 1998; Chodil, Irani et al., 2007; Chodil, Meyers et al., 2007; Loureiro, McCluskey, & Mittelhammer, 2002; McCluskey & Loureiro, 2003; Moon, Florkowski, Bruckner, & Schonhof, 2002). However, in some cases the ramifications of indicating specific product attributes goes far beyond the individual consumer's interest in and willingness to pay for specific attributes (Golan et al., 2007, November).

Business interests add complexity to the issue of food labeling. While firms may voluntarily label foods, the resulting information, or lack of, may not produce the greatest social benefit (Golan et al., 2007, November). Golan, Kuchler, & Krissoff (2007, November) acknowledged that consideration of the ratio of greater social benefits to costs may produce different labeling standards than those resulting from the sole consideration of private benefits and costs, especially when an entire product category possesses an undesirable attribute. Disclosing the sodium content of processed foods illustrated the point, in that such nutritional information was not included on package labels until it was required. The attribute was consistent among competing products; therefore, there was no benefit to manufacturers for voluntary labeling (Golan et al., 2007, November). In this case, the social benefit of consumer education on sodium levels outweighed the private cost of including the information on product labels and resulted in regulated food labeling, which filled an information gap voluntary labeling would not have targeted.

As a result of regulated and voluntary food labeling, a number of organizations have developed labels to indicate certain product attributes, including fair trade, all

natural, sustainable, organic, and GE-Free (Caswell, 1998; Golan et al., 2007, November; Harris, 2007; National Organic Program, n.d.; Post, 1999). Though not an exhaustive list, these and similar labels can broadly be categorized as eco-labels (Harris, 2007; Howard, 2006). While the use of most of these labels is regulated by governmental or non-governmental organizations, the implications of each label may not be apparent to consumers, and in fact consumers may infer that product characteristics exist that are not actually a part of the standards indicated by the label (Getz & Shreck, 2006). To increase the credibility of and consumer trust in the truthfulness of food labels, several certification programs have been established in the United States and elsewhere (Caswell, 1998; Getz & Shreck, 2006; Golan et al., 2007, November; Harris, 2007; Post, 1999). Figure 2 shows examples of labels created to indicate specific product attributes.

Figure 2. Food labels, like these examples, were established to distinguish products with specific characteristics from their competition (Food Alliance, 1997a; Golan et al., 2007, November).

Third-Party Certification

In the last two decades, as the need to distinguish product attributes from the competition has risen, certification processes have developed, primarily those of third-

party certification services (Getz & Shreck, 2006), which Golan, Kuchler, & Krissoff (2007, November) define as " labeling services offered by an entity other than the buyer or seller" (p. 7). Third-party certification agencies develop a set of production standards by which farmers, food processors, manufacturers, and others involved in the production chain are judged and to which they are held accountable to receive and maintain certified status, which in most cases grants the privilege of using a certain label or claim on product packages (Caswell, 1998; Food Alliance, 1997a; Getz & Shreck, 2006; Golan et al., 2007, November; National Organic Program, 2002; Post, 1999; Sustainable Agriculture Network, 2008).

One of the nationally regulated certification programs is USDA's National Organic Program (National Organic Program, n.d.; United States Department of Agriculture, 2005). This program is structured to allow agencies outside USDA to gain accreditation as certifying agencies. That is, private organizations who meet certain criteria are accredited to conduct organic certification audits for farmers, ranchers, food processors, and others who may seek organic certification (National Organic Program, n.d.). Once an individual or organization has received certification, the official USDA Organic label can be applied to fresh and packaged foods.

These third-party certification programs increase the value and credibility of the certification processes and claims, and increase customer trust in the resulting food labels (Caswell, 1998). However, as Getz and Shreck (2006) discovered, certification standards are not always well understood by consumers and, in fact, consumers may not be aware of some of the implications and unintended results of certification programs, especially concerning food produced outside of the United States. In a study of two agricultural

communities, one in Mexico and one in the Dominican Republic, Getz and Shreck (2006) found the organic certification program actually increased economic and social inequalities. The program was found to create additional market opportunities as well, but at the cost of unintended social ramifications such as inequalities. Additionally, the majority of local farmers in a fair-trade-certified community were uneducated about the label's meaning and often unaware of the program's affect on them as producers (e.g., even material benefits resulting directly from fair trade were attributed elsewhere) (Getz & Shreck, 2006).

Though Getz and Shreck (2006) still recognized the value of certification programs, they concluded from the two case studies that "operationalizing ideal agricultural production practices via third-party certification is a complex process that can create disconnect between expectations raised by the label and certification's implementation on the ground" (p. 499).

Sustainable Certification

With many definitions of sustainable agriculture (P. Allen et al., 2000, June) and a number of eco-labels on the market, it is necessary to discuss the certification program resulting in the label "certified sustainable." As previously discussed, several labels fall into the broad-based category of sustainable agriculture – fair trade, all natural, organic, and GE-Free, to name a few (Caswell, 1998; Golan et al., 2007, November; Harris, 2007; Post, 1999). However, there is a more specifically defined eco-label called "sustainable" that also falls into the broad category of sustainable agriculture (Food Alliance, 1997a).

For the remainder of this study, "certified sustainable" will refer to this specific eco-label, while "eco-labels" will refer to the broader category of food labels.

The Food Alliance (1997a), the only sustainable certification agency with a labeling program based on farm practice and monitored by a third party in the Northwest (Loureiro et al., 2002), was established by Oregon State University, Washington State University, and the Washington State Department of Agriculture. In 1997 it became an independent non-profit organization and in 2008 has offices in Oregon, Minnesota and California. The mission of Food Alliance "is to create market incentives for more socially and environmentally responsible agricultural and business practices" (Food Alliance, n.d., p. 4). To accomplish that mission, the Food Alliance provides certification after a third-party site inspection, which provides certified farms, ranches, and food handlers a means to "differentiate their products, strengthen their brands, and support credible claims for social and environmental responsibility" (Food Alliance, n.d., p. 4).

Farm and Ranch Certification

The Food Alliance (1997a) established a set of guiding principles that include protecting and conserving water resources, protecting and enhancing soil resources, reducing the environmental and health impacts of pesticides with Integrated Pest Management, conserving and enhancing wildlife habitat, conserving and recycling nutrients, providing safe and fair working conditions for employees and families, providing healthy and humane care for livestock, producing foods that are not derived from genetically modified organisms (GMO's), and continually improving farming and ranching practices. Based on those guiding principles for farms and ranches, the

organization developed a set of fixed standards that must be met and by which farmers and ranchers seeking certification are first evaluated:

1. No use of genetically modified seed varieties or livestock breeds.
2. No use of hormones or feed additive (nontherapeutic) antibiotics in livestock production.
3. Continual improvement of management and production practices.
4. No use of high toxicity pesticides included on prohibited list (Food Alliance, 1997b, ¶ 1).

The organization established a list of prohibited pesticides based on the acute toxicity of active ingredients. That list was included with their guidelines and standards (Food Alliance, 1997a).

Farmers and ranchers wishing to certify part or all of their operations submit an application to the Food Alliance. If the application is complete, it is sent to an independent site inspector who then conducts an on-site inspection. The inspection consists of interviewing employees and managers, touring fields and facilities, and looking through records pertinent to certification (Food Alliance, 1997a).

If a farm or ranch passes the certification process, it may operate under that certification claim for three years before a renewal is required (Food Alliance, 1997a). It must also establish goals to continually improve its operation relative to the Food Alliance's guiding principles. During the three-year period, certified producers must submit annual reports and could have un-announced visits from Food Alliance site inspectors. If the standards are not maintained or continual-improvements goals not met, the operation could have its certification suspended or revoked (Food Alliance, 1997a).

The Food Alliance (1997a) not only requires ongoing improvements to certified operations, but it also requires an annual fee in addition to the initial application fee. The fee is determined by the type of operation (i.e., individual farms, cooperatives and producer groups, or contract producers) and by the gross sales of the operation. A sliding scale is used to determine the percentage of gross sales an operation must pay. For example, an individual farm or ranch grossing $175,000 to $300,000 annually would pay a fee of 0.25% of gross sales. In the case of individual farms and ranches, the annual fee includes inspection costs associated with continued certification (i.e., inspection to renew certification every three years).

Food Handler Certification

Much like the guiding principles established for farms and ranches, Food Alliance (1997a) determined priorities for food handler certification. Those priorities include providing safe and fair working conditions, reducing resource consumption by maximizing conservation and recycling, reducing the use of toxins and hazardous materials, protecting product integrity and nutritional value, ensuring quality control and food handling safety, meeting legal responsibilities, and continually improving practices.

Food handling operations indicate under which category of handler they wish to seek certification – Category I, II, or III (Food Alliance, n.d.). Category I consists of companies "that process their own product or retain other handlers to perform manufacturing or other contract services" (Food Alliance, n.d., p. 5). Category II includes "operations, such as brokers or distributors that take title to product but do not change its form" (Food Alliance, n.d., p. 5). Category III "is for handlers retained on contract to process products intended to bear Food Alliance Certified content claims" (Food

Alliance, n.d., p. 5). Handlers approved under Category III do not actually hold Food Alliance certification; they are considered an approved restricted handler and may not make claims to being *certified* by Food Alliance (Food Alliance, n.d.).

Like farms and ranches, food handlers must submit an application and undergo a third-party site inspection as part of the certification process (Food Alliance, n.d.). Handlers in all three categories are subject to random inspections during the term of certification, which for handlers is only one year. Renewal applications must be filed annually and certification applications must be filed for new or altered products as needed during the certification period. Inspection fees are assessed for the actual cost of the inspection and licensing fees are determined on a sliding scale based on gross sales of certified products and category of certification (Food Alliance, n.d.).

Food handlers claiming Food Alliance certification must follow specific labeling requirements established by Food Alliance. For example, any product bearing the Food Alliance certification seal must contain 80% or more certified ingredients, whereas any product bearing the claim "Made with Food Alliance Certified Ingredients" must contain at least 50% certified ingredients (Food Alliance, n.d.).

Grower Perspective

Since the sale of a certified end product requires certification of farms and ranches as well as food handlers and distributors en route from farm to table, the issue becomes complex, requiring a look at the perspectives of many parties, including the producers. In a survey of Wisconsin farmers, Morris, Bellinger, and Rosenfeld (1992) found 62.2% of farmers in general and 91.5% of vegetable producers relied heavily on

synthetic fertilizers and pesticides. While the majority of non-vegetable producers indicated they had not adopted alternative practices because their current practices presented no problems, the vegetable producers responded the alternatives were too risky or external factors (e.g., financial lenders, crop insurers, marketing contracts) prevented them from using more sustainable practices (Morris et al., 1992).

Conventional and sustainable producers, according to J. C. Allen and Bernhardt (1995), agreed that "modern agriculture is a minor cause of ecological problems" (p. 306). Conversely, Morris et al. (1992) found the environmental and health impact of using agrichemicals to be a point of contention between conventional and sustainable farmers.

J. C. Allen and Bernhardt (1995) concluded both farmers who use traditional methods and those who use sustainable methods agree that farming should be treated as a business with the goal of earning a profit to provide for an above average standard of living, which confirms what Morris et al. (1992) found – "lack of information, experience with, and availability of dependable, profitable alternatives to chemical inputs prevents the vast majority of chemical-reliant farmers from switching to more-sustainable farming approaches" (p. xiv). Sustainable farmers in Iowa also indicated they would not likely continue sustainable practices if they were not profitable, although they did value the positive impact their efforts made on the environment (Carolan, 2006).

Consumer Perspective

A significant amount of research has been done in the areas of consumer opinion and willingness to pay for eco-labeled products (Chodil, Meyers et al., 2007; Fraj &

Martinez, 2007; Harris, 2007; Loureiro et al., 2002; McCluskey & Loureiro, 2003; Robinson, Smith, Murray, & Ennis, 2002). In general, consumers' have a low awareness of sustainable certification labels and how certified sustainable products differ from conventional and organic products (Loureiro et al.; Robinson et al.). In fact, Loureiro et al. determined "it may be the case that many consumers who would be favorably disposed towards purchasing eco-labeled apples consider organic apples to be an even safer and more environmentally friendly alternative" (p. 215). On the other hand, Chodil, Meyers, et al. indicated some consumers saw eco-labels as "'a form of advertising'" (¶ 14). Consumers' criticism of labeling programs and low awareness of the meaning of various food labels was an issue for focus group participants in a study conducted in the southeast United States (Chodil, Irani et al., 2007), which looked specifically at all-natural pork. Participants indicated they preferred to receive information about certification programs through advertising campaigns. After a marketing intervention, Robinson et al. found consumers' awareness of the sustainable label increased but their shopping habits had not been affected (the authors indicated behavior changes may take more time than attitude changes).

Robinson et al. (2002) found consumers' willingness to pay a premium (i.e., an increased price for the certified sustainable product) varied based on the food product, but in general consumers were willing to pay a 10-30% premium, with more consumers on the lower end of that range. With regard to fruits and vegetables specifically, 32% of consumers were willing to pay a 10% premium, while 27% would pay a 20% premium, and 16% would pay a 30% premium (Robinson et al.). Loureiro et al. (2002) surveyed customers at two Portland, Oregon grocery stores and found those consumers only

willing to pay an additional 5% for certified sustainable apples. They also found women and those with kids under 18 were more willing to pay a premium for the certified sustainable apples, while Robinson et al. did not find those demographic characteristics to be indicators of consumers' willingness to pay. Howard and Allen (2006) found significant differences in the product-label preferences of consumers based on gender, ethnicity, age, and whether there were children in the household. Cultural factors have also been shown to affect consumers' perceptions of eco-labeled foods, especially in the European Union, Japan, and China (McCluskey & Loureiro, 2003).

In two consumer studies, respondents indicated product quality was of higher importance than attributes associated with a certified sustainable label (Loureiro et al., 2002; Robinson et al., 2002). More specifically, consumers prioritized fresh, good tasting, safe, and healthy products over those produced with environmentally friendly practices (Robinson et al.). These findings were confirmed by McCluskey and Loureiro (2003) who, in a comparison of research related to eco-labels, genetically modified (GM) foods, regional and local origin labeling, BSE-tested labels, and fair trade labels, concluded that quality was consumers' first priority.

Oregon Processed Fruits and Vegetables

While extensive research has been conducted regarding consumers' and growers' perceptions, no research was found specifically addressing food processors' role in the sustainable certification effort. Oregon's widespread production of fruits and vegetables, especially those produced for processing, provided an appropriate environment to conduct this study. In 2002, the market value of Oregon's fruits and vegetables was more

than $630 million (United States Department of Agriculture, 2002a). That measure included vegetables, melons, potatoes, sweet potatoes, fruits, tree nuts, and berries, with direct-market products accounting for $21 million and certified organic products accounting for $9.9 million. Several fruits and vegetables rank in Oregon's top 40 commodities based on economic value (Oregon Department of Agriculture, 2007). Oregon is also ranked at the top nationally in production of four berry varieties and second nationally in production of boysenberries, sweet cherries, processed snap beans, and red raspberries. Other fruits and vegetables ranked in the top eight nationally included onions, blueberries, strawberries, processed green peas, processed sweet corn, cranberries, and potatoes (Oregon Department of Agriculture).

Chapter Summary

The agriculture industry has become a player in the initiatives worldwide to increase sustainability through environmentally friendly production practices. As producers adopt these alternative systems, food labels have provided a means to transform credence attributes to search attributes (Caswell, 1998). While a number of food labels currently exist, including fair trade, GE free, organic, all natural, and sustainable, few of the programs are governmentally regulated. Instead, private organizations have developed third-party certification programs to increase the credibility of product certification and the resulting labels. One specific certification program, sustainable certification, works to ensure protection and improvement of wildlife habitat, water resources, labor conditions, and reduced pesticide use. Labeling foods through this program requires certification at the producer and handler operations and can be costly

for both. Therefore, it is important to consider the grower and consumer perspectives to determine their priorities and interest in supporting the certification program. While growers value protecting the environment, the bottom line for conventional and alternative producers is maintaining profitability (J. C. Allen & Bernhardt, 1995). Consumers, on the other hand, have positive perceptions of eco-friendly foods and labeling programs, but prioritize product quality above other attributes (McCluskey & Loureiro, 2003). Although there is abundant research related to growers and consumers, food processors are key players who have not been studied. Since processors serve as the middle-man between farmers and consumers in the certification process, their attitudes toward sustainable certification should be considered.

CHAPTER III

METHODOLOGY

Introduction

Chapters one and two provided background information, established the purpose and objectives, and justified the significance of the study. The theoretical framework was also identified in chapter two. This chapter expands on methods used to conduct the research. It is intended to provide a blueprint for future researchers who may wish to duplicate the study in whole or in part to further the knowledge base related to sustainable agriculture, food labels, certified food processors, and other related areas.

This chapter includes a detailed discussion of the design and variables of the study as well as how the population was selected. Additionally it explains the development and testing of the instrument, including reports on its reliability and validity. Finally, the collection and analysis of data is discussed.

Purpose of the Study

The purpose of this study was to determine Oregon food processors' attitudes toward promoting and expanding production of processed certified sustainable fruits and vegetables.

Objectives of the Study

To accomplish the purpose of this study, the following objectives were established:

Objective 1

Determine whether fruit and vegetable processors are committing financial resources to marketing certified sustainable fruits and vegetables.

Objective 2

Evaluate food processors' attitudes toward sustainable agriculture.

Objective 3

Evaluate processors' attitudes toward the sustainable certification process.

Objective 4

Evaluate processors' perceptions about what their competitors are doing with regard to processing certified sustainable fruits and vegetables.

Objective 5

Determine processors' perceptions of the benefits, drawbacks and incentives to promote and process certified sustainable fruits and vegetables.

Institutional Review Board

A proposal of this study was submitted to the Institutional Review Board (IRB) at Oklahoma State University for review and approval. The purpose of this review was to evaluate the proposed research and guarantee protection of the research subjects. The required materials were submitted to IRB in November 2007. After revisions were made to the application, final approval was granted November 27, 2007. The approved application number was AG0746 (See Appendix A for complete documentation).

Research Design

Questionnaire Design

Survey methods (Creswell, 2005) were used in this study. An online survey was developed to collect data using the Dillman (2007) tailored design method. This method includes introduction of the Web questionnaire with a welcome screen including information about the significance of the study and instructions on how to proceed, formatting similar to that of a paper questionnaire, maintaining readability by using a consistent, simple color scheme (in this case, black on white), providing additional instructions at the point they are needed, and allowing respondents to proceed without answering each question (Dillman, 2007). Data collection and follow-up procedures are detailed later in Chapter IV.

Variables

The variables established in the objectives of this study were: measures fruit and vegetable processors' are taking to promote and expand production of processed certified sustainable fruits and vegetables; fruit and vegetable processors' attitudes toward sustainable agriculture; fruit and vegetable processors' attitudes toward the sustainable certification process; fruits and vegetable processors' perceptions about what their competitors are doing with regard to promoting and expanding production of certified sustainable products; and fruit and vegetable processors' perceptions of the benefits, drawbacks, and incentives to promote and process certified sustainable fruits and vegetables.

Subject Selection

Population

The population for this study consisted of food processors registered with the Oregon Department of Agriculture whose primary activity was recorded by March 1, 2007, as processing fruits and vegetables, and the Oregon fruit and vegetable processors listed in the Judge's 2006 Food Processors of North America Guide. This population was selected after the researcher contacted the Oregon Department of Agriculture and the Northwest Food Processors Association. Representatives from both agencies provided hard-copy lists of fruit and vegetable processors, and the Northwest Food Processors Association representative provided an electronic copy of the Judge's 2006 Food Processors of North America Guide.

The size of this population (N=79) was conducive to a census study; therefore, the study targeted all processors on the two lists, with duplications eliminated. Duplications were eliminated by a comparison of business name and address. When two entries had an identical business name and address, one was deleted from the contact list. The researcher found some additional duplicates once the data collection process started. If the researcher was directed to contact the company headquarters after calling a factory, the researcher considered the factory a duplicate since the two numbers (factory and headquarters) resulted in only one unique respondent. In that case, the researcher deleted the factory from the population. Likewise, if the researcher called the headquarters and was directed to call the factory number, the headquarters entry was deleted from the population. There were five other deletions: two companies were no longer in business, two responded they did not do any processing, and one was considered a foreign element

of the population (Warde, 1990), because the researcher was directed to the headquarters in Washington state. Deletion of additional duplications, after starting the data collection process, resulted in a usable population of size N=55.

Instrumentation

Development Procedures

Since no other research was discovered regarding food processors' attitudes toward certified sustainable products, there were no existing instruments found that were appropriate for this study. Therefore, a survey was developed by the researcher to meet the objectives established in chapter one. The survey was administered online and responses were stored in a password-protected database.

The instrument included semantic differential scales, Likert-type scales, and multiple choice demographic questions (See Appendix B for the instrument). Osgood's (1964) semantic differential scales are one of the most widely used methods of measuring consumers' attitudes (Hughes, 1969; Landon, 1971; Sharpe & Anderson, 1972). Rather than borrowing an established set of adjective pairs, a unique list was developed based on Dickson and Albaum's (1977) finding that it is important to develop "specific test instruments which are tested carefully in the context area for which they are designed" (p. 91). The forced-choice semantic differential scales consisted of seven response categories (Green & Rao, 1970).

The Likert-type scales also used forced-choice methods. Respondents were given the option to respond "strongly agree," "agree," "disagree," or "strongly disagree." The answer choices were abbreviated SA, A, D, SD, respectively. Each variable was

addressed with a separate set of questions, and the instructions and answer choices were provided at the top of each set of questions. Radio buttons were used for all multiple-choice items in the instrument except one demographic question, which used checkboxes to allow respondents to select all regions in which they had growers.

Validity and Reliability

Face and content validity of the instrument were established by a panel of experts. The panel of experts consisted of the executive director of a third-party sustainable certification agency, a member of the Northwest Food Processors Association, and a staff member of the Institute for Natural Resources at a university in the Northwest. Construct validity was established by factor analysis.

Reliability of the instrument was established by a pilot test (see Appendix C for complete pilot instrument). The pilot-test group consisted of thirty randomly selected fruit and vegetable processors in the state of Washington from the Judge's Food Processors of North America Guide. The pilot test was conducted from December 4 to December 14, 2007, and followed the same protocol as the actual study. A shorter time period was adequate because only ten responses were needed to run the necessary reliability tests.

Cronbach's alpha was run on all scaled items in the instrument to determine reliability, which included semantic differential scales and Likert-type scales. The reliability tests for the semantic differential scales, which measured fruit and vegetable processors' attitudes toward sustainable agriculture and their attitudes toward the sustainable certification process, resulted in an alpha coefficient of .70 (α=.05). The Likert-type scale used to measure fruit and vegetable processors' perceptions about what

their competitors are doing with regard to promoting and expanding production of certified sustainable products had an alpha coefficient of .89 (α=.05). Reliability analysis of the Likert-type scales used to measure fruit and vegetable processors' perceptions of the benefits, drawbacks, and incentives to promote and process certified sustainable fruits and vegetables resulted in an alpha coefficient of .91 (α=.05). These reliability coefficients were determined to be sufficiently reliable (Nunnally, 1978).

Data Collection

The data were collected from January 17, 2008, to March 4, 2008. A phone call was made to each company in the population beginning January 17, 2008, to solicit participation in an online survey (see Appendix D for initial-contact script). The researcher asked to speak with an owner or manager of the company, assuming s/he would be involved in decision making related to sustainable certification and processing of certified sustainable fruits and vegetables. At that time, the title of the study was given and an e-mail address recorded for those who agreed to participate. The researcher made five attempts to contact each potential respondent. If contact was not made with the respondent within five attempts, no additional calls were made to that phone number.

After the respondent agreed to participate, the researcher sent an e-mail with a link to the survey site. The e-mail also included the necessary informed consent information and reiterated details about the study (see Appendix E for informed consent letter).

The cover page of the online survey included instructions to complete the survey as well as information about subject confidentiality (see Appendix F for online survey

cover page). The site required respondents to enter an e-mail address before beginning the survey. Submitting an e-mail address served to confirm respondents' consent and also provided the researcher a list of those who had responded.

The database automatically incremented an internal value to assign each respondent a unique identifier when s/he began the survey. The list of identifiers matched with e-mail addresses was logged separately from the responses, and both were stored in a secure, password-protected database.

Once a respondent consented to participate in the survey by entering an e-mail address and proceeding to the start of the survey, s/he was considered a participant. Participants could exit the survey site at any time during the course of the survey. A participant's responses were not recorded in the database until s/he selected to continue to the next page. If a participant filled out a survey page but exited the survey site before clicking "next page," the data from the current page was not recorded in the database. Also, to respond to the scaled items, participants selected a bubble. This feature allowed participants to select only one response to each question. Once a selection was made, participants could not deselect their response to that item (i.e., not respond at all); however, they could *change* their response. For example, a participant who selected "SA" could change his response to "D," but he could not remove his response to that item altogether.

Beginning January 25, 2008, follow-up e-mails were sent to those who agreed to participate in the study but had not yet completed the survey (see Appendix G for follow-up e-mail). Because the researcher made contact with subjects on different days, she kept a schedule of when initial contact was made and sent reminder e-mails, which included a

link to the survey site, to those who agreed to participate seven and fourteen days after contact was made by phone. Beginning March 3, 2008, the researcher called respondents who agreed to participate but had not yet completed the survey.

Data Analysis

Once the data were collected, they were extracted from the database to an Excel spreadsheet and entered into Statistical Package for the Social Sciences (SPSS) version 11 for Mac for analysis. Descriptive statistics were calculated, including frequencies, means, medians, modes, and standard deviations. Additionally, cross tabs were run to determine how the characteristics of food processors compared with responses to specified questions.

A factor analysis with varimax rotation was run on the word pairs for each semantic differential scale. Five factors related to fruit and vegetable processors' attitudes toward sustainable agriculture were retained based on the criteria to retain those with a resulting Eigen value of greater than or equal to 1. With the same criteria, four factors related to fruit and vegetable processors' attitudes toward the sustainable certification process were retained.

Likert-type scale responses included strongly agree (SA), agree (A), disagree (D), and strongly disagree (SD). The responses were coded as 1, 2, 3, 4, respectively, for all sections except the drawbacks to processing certified sustainable products. For this section, which consisted of negative statements, the scale was reversed, so strongly agree was coded as 4 and strongly disagree as 1. Calculated means were categorized as follows:

μ = 1-1.74 – Strongly Agree

μ = 1.75-2.49 – Agree

μ = 2.50-3.24 – Disagree

μ = 3.25-4.00 – Strongly Disagree

Calculated means for statements regarding respondents perceptions of the drawbacks to processing certified sustainable fruits and vegetables were categorized as follows:

μ = 1-1.74 – Strongly Disagree

μ = 1.75-2.49 – Disagree

μ = 2.50-3.24 – Agree

μ = 3.25-4.00 – Strongly Agree

For a detailed record of the data analysis, see Chapter IV.

CHAPTER IV

FINDINGS

Introduction

In Chapter I, a background of the topic was given, which led to the purpose and objectives of the study. The significance of the study was described as well as its assumptions and limitations. A list of key words with their definitions was also provided. Chapter II provided a detailed summary of literature previously conducted in sustainability, sustainable agriculture, food labels, sustainable certification, and other areas related to the study. Chapter III provided a blueprint for the methodology used to design the instrument, select subjects, collect data, and analyze the data. This chapter will present the findings related to each objective.

Purpose of the Study

The purpose of this study was to determine Oregon food processors' attitudes toward promoting and expanding production of processed certified sustainable fruits and vegetables.

Objectives of the Study

To accomplish the purpose of this study, the following objectives were established:

Objective 1

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Objective 5

Determine processors' perceptions of the benefits, drawbacks and incentives to promote and process certified sustainable fruits and vegetables.

Survey Respondents

The researcher began the data collection process by asking to speak with an owner, manager, or other appropriate person who could answer questions on a survey regarding sustainable agriculture and sustainable certification. Although there were no questions on the survey that determined the position or other demographic characteristics of the individual person completing it, the researcher was able to collect some information informally during the phone conversations that was used to make initial contact with food processors. In several instances, the researcher was able to speak directly with the owner, president, or chief executive officer of the business. In other

cases, the researcher had to explain in great detail the nature of the questionnaire before being directed to the person who could complete it. Some processors had a marketing coordinator and others had a sustainability expert who completed the questionnaire.

Response Rate

After the elimination of duplicates, the usable population was N=55, as discussed in Chapter III. Of the usable population, 35 subjects consented to participate and entered the survey site to respond, which resulted in a response rate of 63.64%. Of those 35 respondents, 32 completed part or all of the survey, which resulted in a usable response rate of 58.18% (Warde, 1990).

One respondent completed the survey twice. Upon review, the researcher decided the respondent had likely completed the survey and then went back to the company's records to confirm responses. The respondent then re-entered the survey site and completed all questions a second time with presumably more accurate information. The researcher decided to keep the most recent response (i.e., the second response) and remove the earliest response from the data set.

Another respondent had only one response selected in the entire survey. It was the middle response to a semantic-differential-scale item. The item was the first on that page of the survey. Since it was at the top of the page, the only question completed, and was marked in the middle of the continuum, and because of the design of the survey (i.e., once a response was selected it could only be changed, not removed completely), the researcher decided it could be reasonably assumed the response was accidental.

Therefore, the response was disregarded, and the respondent was not calculated in the usable response rate.

Nonresponse

Nonresponse creates a situation in which the researcher cannot know whether those who responded represented a certain group within the population or were indicative of the population as a whole (i.e., whether the results can be generalized to the population) (Miller & Smith, 1983). Lindner, Murphy, and Briers (2001) stated "nonresponse error is a concern for response rates as high as 90%" (p. 44). To identify potential nonresponse error, the researcher compared early to late respondents; early respondents were classified as those who responded before the first reminder e-mail, and late respondents were classified as those who responded after the first reminder e-mail (Lindner et al., ; Miller & Smith). Chi-square was used to compare early and late responders' responses to variables of interest (Lindner et al.). Ten items were compared and resulted in values below 3.84, which is the critical value with a p-value of .05 and 1 degree of freedom. This indicated there was no significant difference between the two groups (p=.05) and the results could be generalized to the population.

Population Demographics

Based on the Oregon Department of Agriculture's map of the growing regions of Oregon, each respondent was asked to indicate the location of his/her facility as well as the locations of his/her company's growers. Figure 3 shows the map from the Oregon Department of Agriculture that was used (see Figure 3). Twenty-seven (84.38%) of the

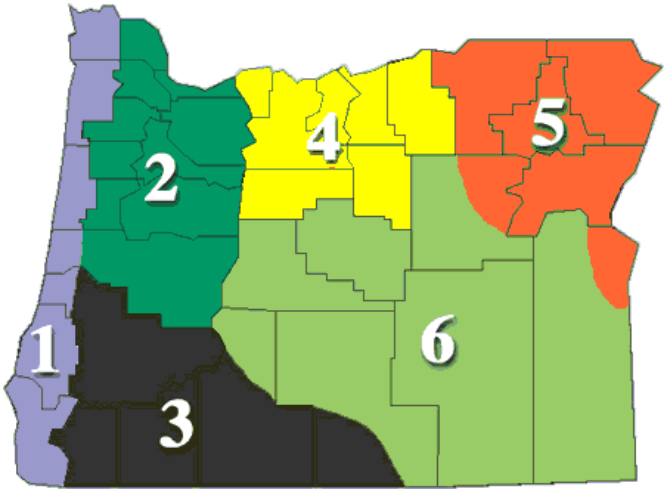

Figure 3. The Oregon Department of Agriculture divided Oregon into six growing regions, which were used to determine the location of fruit and vegetable processors and their growers in this study.

fruit and vegetable processors were located in the Willamette Valley (Table 1).

Table 1

Frequencies of Fruit and Vegetable Processors' Locations and Their Growers' Locations by Growing Region

	Growing Region					
Variable	Coast	Willamette Valley	Hood River Valley	Southern	Columbia Basin	Southeast
Location of Processing Facilities	1	27	2		1	
Location of Growers	2	27	13	4	7	1

Of the remaining fruit and vegetable processors, 3.13% (1) were located in the coastal region, 6.25% (2) were in the Hood River Valley, 3.13% (1) were in the Columbia Basin, and 3.13% (1) did not respond. The locations of those processors' growers were somewhat more diverse. Respondents were asked to select all that applied regarding locations of growers. Again, 84.38% (27) fruit and vegetable processors had growers in the Willamette Valley, 6.25% (2) had growers in the coastal region, 40.63% (13) had growers in the Hood River Valley, 12.50% (4) had growers in southern Oregon, 21.88% (7) had growers in the Columbia Basin, 3.13% (1) had growers in southeast Oregon, and 3.13% (1) did not respond.

Oregon's fruit and vegetable processors varied in number of locations. Of the 32 responses, 50.00% (16) had one location, 21.87% (7) had two locations, 18.75% (6) had 3-5 locations, 6.25% (2) had more than 5 locations, and 3.13% (1) did not respond. Respondents were also diverse regarding number of full-time employees with that number ranging from 2 to 1,500 (Table 2).

Table 2

Fruit and Vegetable Processors' Numbers of Full-time Employees

Employees	*f*
1-4	7
5-9	4
10-19	
20-99	9
100-499	9
500 or more	2

Half of Oregon's fruit and vegetable processors were not certified sustainable, while 31.25% (10) were certified, 12.50% (4) did not know about sustainable certification, and 3.13% (1) did not respond (Table 3). Of those certified, 20.00% (2) of fruit and vegetable processors listed Oregon Tilth; 50.00% (5) listed Food Alliance; 10.00% (1) listed Sysco; 10.00% (1) listed USDA, FDA, AIB; and 10.00% (1) indicated the company was in the certification process.

Table 3

Frequency of Certified Sustainable Fruit and Vegetable Processors

Certification Status	*f*
Yes	10
No	16
Don't know about sustainable certification	4

Findings Related to Marketing Sustainable Certification

Objective one was to determine whether Oregon fruit and vegetable processors were committing financial resources to marketing certified sustainable fruits and vegetables. Of the 32 respondents, 59.38% (19) spent none of their gross sales on marketing materials promoting sustainable certification, 18.75% (6) spent less than 1% of gross sales on marketing materials promoting sustainable certification, 12.50% (4) spent 1-2% of gross sales on marketing materials promoting sustainable certification, 3.13% (1) spent 10.1-20% of gross sales on marketing materials promoting sustainable certification, and 6.25% (2) did not respond (Table 4).

Table 4

Frequencies of Food Processors' Percent of Resources Spent on Marketing Materials Promoting Sustainable Certification.

Resource	Percent							
	None	< 1%	1-2%	2.1-5%	5.1-10%	10.1-20%	20.1-30%	NR
Gross sales spent on marketing materials promoting sustainable certification	19	6	4			1		2
Marketing resources used to market sustainable certification	18	7	2			1	1	3

Of those who responded they spend none of their gross sales on marketing materials promoting sustainable certification, 10.53% (2) were certified sustainable, 73.68% (14) were not certified sustainable, 10.53% (2) did not know about sustainable certification, and 5.26% (1) did not respond. Additionally, 31.58% (6) had plans in place to expand promotion or production of certified sustainable products while 68.42% (13) did not have plans in place to expand promotion or production of certified sustainable products.

Of those who responded they spend less than 1% of gross sales on marketing materials promoting sustainable agriculture, 66.67% (4) were certified sustainable,

16.67% (1) were not certified sustainable, and 16.67% (1) did not know about sustainable certification. Half (3) had plans in place to expand promotion or production of certified sustainable products while the other 50.00% (3) did not have plans in place to expand promotion or production of certified sustainable products.

Participants were also asked what percent of the company's marketing resources were used to market sustainable certification. As seen in Table 4, 56.25 % (18) spent none of their marketing resources to market sustainable certification, 21.88% (7) spent less than 1% of marketing resources to market sustainable certification, 6.25% (2) spent 1-2% of marketing resources to market sustainable certification, 3.13% (1) spent 10.1-20% of marketing resources to market sustainable certification, 3.13% (1) spent 20.1-30% of marketing resources to market sustainable certification, and 9.38% (3) did not respond.

Of those who spent none of their marketing resources to market sustainable certification, 11.11% (2) were certified sustainable, 77.78% (14) were not certified sustainable, 5.56% (1) did not know about sustainable certification, and 5.56% (1) did not respond. Four (22.22%) had plans in place to expand promotion or production of certified sustainable products, and 77.78% (14) did not have plans in place to expand promotion or production of sustainable products.

Of the 7 respondents who spent less than 1% of their marketing resources to market sustainable certification, 57.14% (4) were certified sustainable, 14.29% (1) were not certified sustainable, and 28.57% (2) did not know about sustainable certification. Additionally, 71.43% (5) had plans in place to expand promotion or production of

certified sustainable products and 28.57% (2) did not have plans in place to expand promotion or production of certified sustainable products.

Findings Related to Processors' Attitudes toward Sustainable Agriculture

Objective two was to evaluate processors' attitudes toward sustainable agriculture. Seven-point semantic differential scales were used to evaluate respondents' attitudes toward sustainable agriculture. Table 5 shows the frequencies of responses for each word pair.

The means on these scaled word pairs ranged from 3.06 (Systematic/ Unsystematic) to 5.84 (Passive/Active). The majority (62.50%) of fruit and vegetable processors indicated sustainable agriculture is more systematic than unsystematic, and 87.50% (28) saw sustainable agriculture as more active than passive.

No fruit and vegetable processors considered sustainable agriculture more cautious than challenging, but 28.13% (9) indicated sustainable agriculture is equally cautious and challenging, while the remaining 71.88% (23) indicated sustainable agriculture is more challenging than cautious. The majority of fruit and vegetable processors (75.00%) indicated sustainable agriculture is more "like me" than "unlike me," 18.75% (6) indicated sustainable agriculture is equally "like me" and "unlike me," and 6.25% (2) indicated sustainable agriculture is more "unlike me" than "like me." Food processors also saw sustainable agriculture as more progressive than traditional, with 81.25% (26) indicating it was more progressive than traditional, 9.38% (3) indicating

Table 5

Food Processors' Attitudes toward Sustainable Agriculture

Conventional	1	2	3	4	5	6	7	μ	σ	Alternative
Traditional		1	2	3	9	11	6	5.41	1.27	Progressive
Simple	1	5	1	10	10	4	1	4.22	1.43	Complicated
Like me	4	14	6	6	2			2.63	1.13	Unlike me
Simple*		1	3	3	12	9	4	5.16	1.25	Challenging*
Clear	3	5	5	9	3	6	1	3.81	1.67	Confusing
Structured	3	11	6	4	3	3	2	3.31	1.75	Unstructured
Systematic	2	10	10	6	2	2		3.06	1.27	Unsystematic
Passive*			1	3	6	12	10	5.84	1.08	Active*
Open*	5	3	5	15	2	1	1	3.41	1.46	Closed*
Minimizing risk*		6	7	6	9	2	2	4.00	1.46	Taking risk*
Cautious*				9	10	9	4	5.25	1.02	Challenging*
Neutrality		2	1	7	9	8	5	5.09	1.35	Advocacy
Rural	4	5	5	11	3	1	3	3.59	1.70	Urban

Note. Word pairs designated by an asterisk were reversed on the instrument.

sustainable agriculture is equally progressive and traditional, and 9.38% (3) indicating sustainable agriculture is more traditional than progressive.

Responses of food processors who were certified sustainable and those who were not certified sustainable regarding attitudes toward sustainable agriculture are shown in Table 6.

Table 6

Food Processors' Mean Attitudes toward Sustainable Agriculture Compared to Their Sustainable Certification Status

Conventional (1)	Population (n=32) μ(σ)	Certified (n=10) μ(σ)	Not Certified (n=16) μ(σ)	Don't Know About Cert. (n=4) μ(σ)	Alternative (7)
Traditional	5.41 (1.27)	5.10 (1.45)	5.31 (1.25)	6.00 (.82)	Progressive
Simple	4.22 (1.43)	4.10 (1.73)	4.56 (.96)	3.75 (1.70)	Complicated
Like me	2.63 (1.13)	2.60 (.84)	2.94 (1.29)	2.00 (.82)	Unlike me
Simple	5.16 (1.25)	5.40 (1.43)	5.06 (.93)	5.25 (2.22)	Challenging
Clear	3.81 (1.67)	3.40 (1.71)	3.94 (1.48)	5.00 (2.00)	Confusing
Structured	3.31 (1.75)	3.50 (1.65)	3.25 (1.73)	4.00 (2.31)	Unstructured
Systematic	3.06 (1.27)	2.80 (.79)	2.88 (1.36)	4.50 (1.29)	Unsystematic
Passive	5.84 (1.08)	5.20 (1.14)	6.19 (.91)	5.75 (1.26)	Active
Open	3.41 (1.46)	3.00 (1.05)	3.81 (1.68)	2.50 (1.29)	Closed
Minimizing risk	4.00 (1.46)	3.60 (1.51)	4.25 (1.53)	3.75 (1.50)	Taking risk
Cautious	5.25 (1.02)	5.30 (1.16)	5.38 (1.03)	5.00 (.82)	Challenging
Neutrality	5.09 (1.35)	4.80 (1.62)	5.06 (1.24)	6.25 (.96)	Advocacy
Rural	3.59 (1.70)	2.90 (1.37)	3.88 (1.78)	4.00 (2.45)	Urban

Certified processors had a mean score of 2.60 on the "like me/unlike me" word pair, while processors who were not certified had a mean score of 2.94. Those who were certified had a mean score of 5.20 on the "passive/active" word pair; processors who were not certified had a mean score of 6.19. For the word pair "minimizing risk/taking risk," certified processors had a mean score of 3.60, and processors who were not certified had a mean score of 4.25. Those who were certified had a mean score of 2.90 for the "rural/urban" word pair, while those who were not certified had a mean score of 3.88, and those who did not know about sustainable certification had a mean score of 4.00.

A factor analysis grouped the scaled items in Table 5 into five factors. Table 7 shows the word pairs that fit into each factor and the loading associated with each word pair. The cumulative mean score for each factor is also shown (Table 7).

The factor analysis showed that processors who saw sustainable agriculture as structured and systematic also saw it as active. While those who considered it unstructured and unsystematic also considered sustainable agriculture to be passive. Those who saw sustainable agriculture as traditional also associated it with neutrality, while those who considered sustainable agriculture progressive also associated it with advocacy. Processors who considered sustainable agriculture simple also considered it cautious. Those who considered sustainable agriculture simple also considered it to be like them and clear, while those who saw sustainable agriculture as complicated also saw it as unlike them and confusing. Processors who saw sustainable agriculture as open also considered it minimizing risk and rural. Those who saw it as closed also considered sustainable agriculture as taking risk and urban.

Table 7

Semantic Differential Word Pairs Related to Processors' Attitudes toward Sustainable Agriculture Grouped by Factor Loading Resulting from Factor Analysis

Factor	μ	Word Pair	Loading
1	4.07	Structured/Unstructured	.72
		Systematic/Unsystematic	.75
		Passive/Active	-.69
2	5.25	Traditional/Progressive	.76
		Neutrality/Advocacy	.88
3	5.21	Simple/Challenging	.91
		Cautious/Challenging	.80
4	3.55	Simple/Complicated	.85
		Like me/Unlike me	.54
		Clear/Confusing	.78
5	3.67	Open/Closed	.77
		Minimizing risk/Taking risk	.59
		Rural/Urban	.62

Note. Negative loading represents word pair reversal in factor analysis.

Findings Related to Processors' Attitudes toward the Sustainable Certification Process

Objective three was to evaluate processors' attitudes toward the sustainable certification process. Seven-point semantic differential scales were used to evaluate respondents' attitudes toward the sustainable certification process. Table 8 shows the

frequencies of responses for each word pair. The means on these scaled word pairs ranged from 3.03 (Rigid/Flexible) to 5.55 (Not advantageous/Advantageous). Twenty one (65.63%) fruit and vegetable processors saw the sustainable certification process as more rigid than flexible, 15.63% (5) saw it as equally rigid and flexible, 15.63% (5) saw it as more flexible than rigid, and 3.13% (1) did not respond. One (3.13%) fruit and vegetable processor indicated the sustainable certification process was more "not advantageous" than "advantageous." Of the remaining fruit and vegetable processors,

Table 8

Food Processors' Attitudes toward the Sustainable Certification Process

Conventional	1	2	3	4	5	6	7	μ	σ	Alternative
Traditional	1	2		3	7	10	8	5.42	1.57	Progressive
Simple	2	2	2	1	9	11	4	5.00	1.69	Complicated
Simple*			2	5	8	11	5	5.39	1.15	Challenging*
Clear	2	2	4	5	8	7	3	4.55	1.67	Confusing
Systematic	2	11	7	6	2	1	2	3.19	1.56	Unsystematic
Generalization	2	2	1	4	12	9	1	4.71	1.51	Specialization
Minimizing risk*		6	6	7	4	5	3	4.16	1.64	Taking risk*
Not advantageous*		1		6	5	12	7	5.55	1.23	Advantageous*
Cautious*				4	11	12	4	5.52	.89	Challenging*
Rigid*	2	14	5	5	3		2	3.03	1.54	Flexible*
Valueless*			1	8	6	10	6	5.39	1.17	Valuable*
Not profitable*	1	3		12	7	6	2	4.52	1.44	Profitable*

Note. Word pairs designated by an asterisk were reversed on the instrument.

18.75% (6) indicated the sustainable certification process is equally "not advantageous" and "advantageous," 75.00% (24) indicated the sustainable certification process is more "advantageous" than "not advantageous," and 3.13% (1) did not respond.

Fruit and vegetable processors considered the sustainable certification process more progressive than traditional (μ=5.42), more complicated than simple (μ=5.00), more challenging than simple (μ= 5.39), more challenging than cautious (μ=5.52), and more valuable than valueless (μ=5.39).

Twenty-five percent (8) of processors indicated the sustainable certification process is more clear than confusing, 15.63% (5) indicated it is equally clear and confusing, 56.25% (18) indicated it is more confusing than clear, and 3.13% (1) did not respond. Fruit and vegetable processors' responses also varied regarding whether the sustainable certification process was "minimizing risk" or "taking risk;" 37.50% (12) responded it was more "minimizing risk" than "taking risk," 21.88% (7) responded it was equally "minimizing risk" and "taking risk," 37.50% (12) responded it was more "taking risk" than "minimizing risk," and 3.13% (1) did not respond.

Processors who were certified sustainable had a mean score of 4.10 for the "clear/confusing" word pair, while those who were not certified had a mean score of 5.00 (Table 9). Certified processors had a mean score of 5.90 for the word pair "advantageous/not advantageous," and those who were not certified had a mean of 5.00. Certified processors indicated the sustainable certification process was more profitable than not with a mean of 5.40, while those who were not certified indicated the sustainable certification process was more "not profitable" than "profitable" with a mean of 3.87.

Table 9

Food Processors' Mean Attitudes toward the Sustainable Certification Process Compared to Their Certification Status

Conventional (1)	Population (N=32) μ(σ)	Certified (n=10) μ(σ)	Not Certified (n=16) μ(σ)	Don't Know About Cert. (n=4) μ(σ)	Alternative (7)
Traditional	5.42 (1.57)	4.90 (1.52)	5.40 (1.72)	6.25 (.96)	Progressive
Simple	5.00 (1.69)	4.80 (1.55)	5.40 (1.55)	4.75 (1.89)	Complicated
Simple	5.39 (1.15)	5.10 (.88)	5.60 (1.40)	5.50 (.58)	Challenging
Clear	4.55 (1.67)	4.10 (1.45)	5.00 (1.73)	4.75 (1.26)	Confusing
Systematic	3.19 (1.56)	2.80 (1.40)	3.40 (1.68)	3.75 (1.50)	Unsystematic
Generalization	4.71 (1.51)	4.40 (1.43)	5.00 (1.46)	5.00 (.82)	Specialization
Minimizing risk	4.16 (1.64)	3.60 (1.84)	4.60 (1.64)	4.00 (1.41)	Taking risk
Not advantageous	5.55 (1.23)	5.90 (.88)	5.00 (1.25)	6.00 (1.41)	Advantageous
Cautious	5.52 (.89)	5.30 (.95)	5.87 (.74)	5.00 (.82)	Challenging
Rigid	3.03 (1.54)	2.80 (.79)	2.93 (1.71)	3.25 (1.50)	Flexible
Valueless	5.39 (1.17)	5.50 (.97)	5.00 (1.13)	5.75 (1.50)	Valuable
Not profitable	4.52 (1.44)	5.40 (.97)	3.87 (1.30)	3.75 (1.26)	Profitable

A factor analysis grouped the scaled items in Table 9 into four factors. Table 10 shows the word pairs that fit into each factor and the loading associated with each word pair. The cumulative mean score for each factor is also shown (Table 10).

Table 10

Semantic Differential Word Pairs Related to Processors Attitudes toward the Sustainable Certification Process Grouped by Factor Loading Resulting from Factor Analysis

Factor	μ	Word Pair	Loading
1	4.32	Simple/Complicated	.89
		Clear/Confusing	.84
		Generalization/Specialization	.62
		Rigid/Flexible	-.75
2	5.15	Not advantageous/Advantageous	.89
		Valueless/Valuable	.87
		Not Profitable/Profitable	.83
3	3.78	Traditional/Progressive	.51
		Simple/Challenging	.74
		Minimizing risk/Taking risk	.85
		Cautious/Challenging	.79
4	3.19	Systematic/Unsystematic	.83

Note. Negative loading represents word pair reversal in factor analysis.

Fruit and vegetable processors who considered the sustainable certification process simple also considered it clear and flexible and associated it with generalization.

Those who saw sustainable agriculture as complicated also considered it confusing and rigid and associated it with specialization. Processors who considered the sustainable certification process to be not advantageous also considered it valueless and not profitable. Those who saw it as advantageous also considered it valuable and profitable. Processors who considered sustainable agriculture to be traditional also saw it as simple, minimizing risk, and cautious. Those who considered it progressive saw it as challenging and taking risk.

Findings Related to Processors' Perceptions about Competitors' Actions

Objective four was to evaluate processors' perceptions about what their competitors are doing with regard to processing certified sustainable fruits and vegetables. A four-point Likert-type scale was used to accomplish this objective (Table 11).

Table 11

Food Processors' Perceptions of Their Competitors' Actions Regarding Promoting and Expanding Production of Certified Sustainable Products.

Statement	SA	A	D	SD	μ	σ
My competitors are aggressively producing materials promoting sustainable certification.		12	15	5	2.78	.71
My competitors have plans to expand promotion and production of certified sustainable products.	1	18	9	4	2.50	.76

With a mean score of 2.78, 15.63% (5) strongly disagreed with the statement "my competitors are aggressively producing materials promoting sustainable certification," 46.88% (15) disagreed with the statement, and 37.50% (12) agreed with the statement. With a mean score of 2.50, 3.13% (1) of processors strongly agreed with the statement "my competitors have plans to expand promotion and production of certified sustainable products," 56.25% (18) agreed with that statement, 28.13% (9) disagreed, and 12.50% (4) strongly disagreed.

Findings Related to Processors' Perceptions of the Benefits, Drawbacks, and Incentives to Process Certified Sustainable Fruits and Vegetables

Objective five was to determine processors' perceptions of the benefits, drawbacks and incentives to promote and process certified sustainable fruits and vegetables. These variables were measured using Likert-type scaled items.

Findings Related to Benefits of Processing Certified Sustainable Fruits and Vegetables

Mean responses to statements about the benefits of processing certified sustainable fruits and vegetables ranged from 1.66 to 2.50 on the four-point scale (Table 12). The mean response to the statement "processing certified sustainable products increases profits" was 2.50, with 43.75% (14) selecting agree or strongly agree and 56.25% (18) selecting disagree or strongly disagree. One hundred percent (32) of processors agreed or strongly agreed with the statement "processing certified sustainable products increases customer trust" (μ=1.75) and 100.00% (32) of processors agreed or strongly agreed with the statement "processing certified sustainable products enhances environmental stewardship" (μ=1.66). Processors also responded to the

Table 12

Frequencies and Means of Food Processors' Perceptions of the Benefits of Processing Certified Sustainable Fruits and Vegetables

Statement	SA	A	D	SD	μ	σ
Processing certified sustainable products increases profits.	4	10	16	2	2.50	.80
Processing certified sustainable products increases customer trust.	8	24			1.75	.44
Processing certified sustainable products fosters customer loyalty.	6	20	5	1	2.03	.70
Processing certified sustainable products enhances environmental stewardship.	11	21			1.66	.48
Processing certified sustainable products increases market security.	3	20	8	1	2.22	.66
Processing certified sustainable products satisfies a market demand.	7	18	6	1	2.03	.74
Processing certified sustainable products puts us in a niche market.	4	23	3	2	2.09	.69

following items: "processing certified sustainable products fosters customer loyalty" (μ=2.03), "processing certified sustainable products increases market security" (μ=2.22), "processing certified sustainable products satisfies a market demand" (μ=2.03), and "processing certified sustainable products puts us in a niche market" (μ=2.09).

As indicated in Table 13, food processors who were certified sustainable agreed with the statement "processing certified sustainable products increases profits" (μ=2.20). Those who were not certified (μ=2.69) and who did not know about sustainable certification (μ=3.00) disagreed with that statement. Food processors who were certified sustainable agreed with the statement "processing certified sustainable products fosters customer loyalty" (μ=1.70), while those who were not certified (μ=2.25) and those who did not know about sustainable certification (μ=2.25) both agreed with the statement. Processors who were certified sustainable agreed that "processing certified sustainable products enhances environmental stewardship" (μ=1.80). Those who were not certified (μ=1.69) and those who did not know about sustainable certification (μ=1.50) strongly agreed with that statement.

Findings Related to Drawbacks of Processing Certified Sustainable Fruits and Vegetables

The scores associated with responses on the Likert-type scaled items for drawbacks were reversed; strongly agree was scored as a 4 and strongly disagree was scored as a 1. Fruit and vegetable processors disagreed with three statements regarding the drawbacks of processing certified sustainable fruits and vegetables (Table 14): "processing certified sustainable products decreases profits" (μ=2.19), "processing certified sustainable products increases economic risks" (μ=2.34), and "my business does not have the capability to meet the sustainable certification requirements" (μ=1.75). Processors agreed with two of the statements: "processing certified sustainable products

Table 13

Means of Food Processors' Perceptions of the Benefits of Processing Certified Sustainable Fruits and Vegetables Compared to Certification Status

	μ(σ)			
Statement	Population (N=32)	Certified (n=10)	Not Certified (n=16)	Don't Know About Cert. (n=4)
Processing certified sustainable products increases profits.	2.50(.80)	2.20(.79)	2.69(.70)	3.00(.82)
Processing certified sustainable products increases customer trust.	1.75(.44)	1.80(.42)	1.81(.40)	1.75(.50)
Processing certified sustainable products fosters customer loyalty.	2.03(.70)	1.70(.48)	2.25(.58)	2.25(1.26)
Processing certified sustainable products enhances environmental stewardship.	1.66(.48)	1.80(.42)	1.69(.48)	1.50(.58)
Processing certified sustainable products increases market security.	2.22(.66)	2.10(.57)	2.19(.54)	2.75(1.26)
Processing certified sustainable products satisfies a market demand.	2.03(.74)	1.90(.57)	2.13(.81)	2.25(.96)
Processing certified sustainable products puts us in a niche market.	2.09(.69)	2.00(.47)	2.13(.72)	2.50(1.00)

Table 14

Frequencies and Means of Food Processors' Perceptions of the Drawbacks of Processing Certified Sustainable Fruits and Vegetables

Statement	SA	A	D	SD	μ	σ
Processing certified sustainable products decreases profits.	1	7	21	3	2.19	.644
Processing certified sustainable products increases costs.	4	23	5		2.97	.538
Processing certified sustainable products increases economic risks.		13	17	2	2.34	.602
There is a lack of grower participation in the sustainable certification programs.	5	16	10		2.84	.688
My business does not have the capability to meet the sustainable certification requirements.		3	18	11	1.75	.622

increases costs" (μ=2.97) and "there is a lack of grower participation in the sustainable certification programs" (μ=2.84).

Findings Related to Incentives to Process Certified Sustainable Fruits and Vegetables

Fruit and vegetable processors agreed with seven of the eight statements regarding incentives to process certified sustainable fruits and vegetables (Table 15). Processors disagreed with the statement "processing certified sustainable products fosters customer loyalty" (μ=2.66). They agreed with the statements "processing certified sustainable products increases profits" (μ=2.22), "processing certified sustainable

products increases customer trust" (μ=2.00), "processing certified sustainable products satisfies a market demand" (μ=2.16), "processing certified sustainable products enhances

Table 15

Frequencies and Means of Food Processors' Perceptions of the Incentives to Process Certified Sustainable Fruits and Vegetables

Statement	SA	A	D	SD	μ	σ
Processing certified sustainable products increases profits.	2	22	7	1	2.22	.608
Processing certified sustainable products increases customer trust.	3	26	3		2.00	.440
Processing certified sustainable products satisfies a market demand.	2	24	5	1	2.16	.574
Processing certified sustainable products fosters customer loyalty.	1	11	18	2	2.66	.653
Processing certified sustainable products enhances environmental stewardship.	8	24			1.75	.440
Processing certified sustainable products puts us in a niche market.	4	22	5	1	2.09	.641
Processing certified sustainable products increases market security.	6	17	9		2.09	.689
Processing certified sustainable products coincides with my progressive management style.	2	19	9	2	2.34	.701

environmental stewardship" (μ=1.75), "processing certified sustainable products puts us in a niche market" (μ=2.09), "processing certified sustainable products increases market security" (μ=2.09), and "processing certified sustainable products coincides with my progressive management style" (μ=2.34).

Chapter Summary

Thirty-two fruit and vegetable processors responded to the survey, which resulted in a usable response rate of 58.18%. The majority of respondents were located in the Willamette Valley and had growers in the Willamette Valley. Several processors also had growers in the Hood River Valley, Columbia Basin, and southern growing regions.

In general, fruit and vegetable processors spent none or less than 1.00% of their gross sales and marketing resources on marketing materials promoting sustainable certification. Fruit and vegetable processors varied on their responses to semantic differential scales regarding sustainable agriculture and the sustainable certification process, with means ranging from 2.63 to 5.84 and 3.03 to 5.55, respectively. Responses were split regarding processors' perceptions about whether their competitors are aggressively producing materials promoting sustainable certification and whether their competitors have plans to expand promotion and production of certified sustainable products.

In general, fruit and vegetable processors agreed with statements about the benefits of processing certified sustainable fruits and vegetables, with means ranging from 1.66 to 2.50. They disagreed with three statements and agreed with two regarding the drawbacks to promoting certified sustainable fruits and vegetables, with means

ranging from 1.75 to 2.97. Finally, fruit and vegetable processors' perceptions about the incentives to process certified sustainable fruits and vegetables were measured. In general, fruit and vegetable processors agreed with the statements, with means ranging from 1.75 to 2.66.

CHAPTER V

CONCLUSION

Introduction

In Chapter I, the researcher provided justification for the study by describing the background and setting, significance, and purpose and objectives. In Chapter II, a detailed review of previously conducted research was given. Chapter III described the methodology used, including subject selection, instrument design, and data collection and analysis. Chapter IV presented the findings according to the data that were collected.

Purpose of the Study

The purpose of this study was to determine Oregon food processors' attitudes toward promoting and expanding production of processed certified sustainable fruits and vegetables.

Objectives of the Study

To accomplish the purpose of this study, the following objectives were established:

Objective 1

Determine whether fruit and vegetable processors are committing financial resources to marketing certified sustainable fruits and vegetables.

Objective 2

Evaluate food processors' attitudes toward sustainable agriculture.

Objective 3

Evaluate processors' attitudes toward the sustainable certification process.

Objective 4

Evaluate processors' perceptions about what their competitors are doing with regard to processing certified sustainable fruits and vegetables.

Objective 5

Determine processors' perceptions of the benefits, drawbacks and incentives to promote and process certified sustainable fruits and vegetables.

Summary of Findings

The majority of fruit and vegetable processors spent none or less than 1.00% of gross sales and none or less than 1.00% of marketing resources on marketing materials promoting sustainable agriculture. Fruit and vegetable processors varied in their responses to scaled items regarding their attitudes toward sustainable agriculture. Means for the 13 semantic-differential-scaled word pairs ranged from 2.63 to 5.84. Attitudes toward the sustainable certification process also varied. Means for the 13 semantic-differential-scaled word pairs ranged from 3.03 to 5.55. Processors responses were split when asked about their competitors' promotion of certified sustainable products, with nearly half agreeing and half disagreeing with Likert-type items. Processors' perceptions about the benefits, drawbacks, and incentives to process certified sustainable fruits and vegetables were measured using Likert-type scales. Mean responses for benefits ranged from 1.66 to 2.50, for items related to drawbacks, the means ranged from 1.75 to 2.97, and for items related to incentives, the means ranged from 1.75 to 2.66.

Conclusions

After analyzing the data, the researcher was able to make conclusions based on the objectives established in Chapter I. Only about one third of fruit and vegetable processors indicated they spend a portion of their financial resources to market certified sustainable fruits and vegetables. In general, fruit and vegetable processors did not commit financial resources to marketing certified sustainable fruits and vegetables.

Fruit and vegetable processors' attitudes toward sustainable agriculture were evaluated using semantic differential scales. The data did not support a generalization about the construct of "sustainable agriculture," but there were some trends within the population for individual word pairs. Processors' mean responses to specific word pairs reflected the attitude that sustainable agriculture is toward the alternative end of the continuum with regard to it being progressive, complicated, challenging, active, and associated with advocacy. However, processors' mean responses to other word pairs reflected the attitude that sustainable agriculture is toward the conventional end of the continuum with regard to it being like them, clear, structured, systematic, open, and rural. Moreover, differences in the mean responses for individual word pairs were seen among processors who were certified sustainable, those who were not certified sustainable, and those who did not know about sustainable certification.

Fruit and vegetable processors' attitudes toward the sustainable certification process were also evaluated using semantic differential scales. Again, the data did not support a generalization about the construct of the "sustainable certification process," but trends for individual word pairs were seen within the population. Fruit and vegetable processors' responses reflected the attitude that the sustainable certification process is

more alternative with regard to it being progressive, complicated, challenging, confusing, specialized, taking a risk, advantageous, valuable, and profitable. Processors' responses reflected the attitude that the sustainable certification process is more conventional with regard to it being systematic and rigid.

Likert-type scales were used to evaluate processors' perceptions about what their competitors are doing with regard to processing certified sustainable fruits and vegetables. Processors were on both ends of the spectrum, but more than half perceived their competitors are not aggressively producing materials promoting sustainable certification. On the other hand, more than half perceived their competitors have plans in place to expand promotion and production of certified sustainable products. So, while processors perceived their competitors have plans to process certified sustainable products, they did not perceive those competitors will work to promote sustainable certification.

To determine processors' perceptions of the benefits, drawbacks, and incentives to promote and process certified sustainable fruits and vegetables, the researcher used a series of Likert-type scales with statements specific to each category. Based on the statements made, fruit and vegetable processors perceived processing certified sustainable fruits and vegetables to be beneficial. Processors especially acknowledged the benefit that processing certified sustainable products increases customer trust and enhances environmental stewardship.

Fruit and vegetable processors acknowledged there were some drawbacks to processing certified sustainable fruits and vegetables. Namely, processors perceived processing certified sustainable products increases costs. They also perceived, in general,

there is a lack of grower participation in sustainable certification programs. While the vast majority of processors perceived their businesses had the capability to meet the sustainable certification requirements, almost half perceived processing certified sustainable products would increase economic risks. Of those who perceived processing certified sustainable products would increase economic risks, 53.85% (7) were not certified sustainable.

Discussion

With no known literature discussing the marketing trends of fruit and vegetable processors with regard to promoting sustainable certification, it is impossible to say whether this population showed similar marketing characteristics to processors of other products or in other states. However, the data showed the majority of those who spent money marketing certified sustainable fruits and vegetables were certified and those who did not spend money marketing certified sustainable fruits and vegetables were not certified. Logically fruit and vegetable processors would market their own products and would not spend money marketing products they do not offer.

Marketing efforts can successfully increase awareness of sustainable certification among consumers (Robinson et al., 2002), but they may not persuade consumers to change their shopping habits. Robinson et al. (2002) found marketing interventions increased customers' awareness of sustainable certification labels, but they did not report a statistically significant change in shoppers' attitude toward sustainably produced foods nor their buying habits related to certified-sustainable-labeled foods. The authors acknowledged that changes in behavior often come after changes in awareness, but at the

completion of their observations, they had not seen significant increases in purchases of certified sustainable products (Robinson et al., 2002).

The data showed some trends among fruit and vegetable processors on individual word pairs relating to sustainable agriculture. Means ranged from 3.06 to 5.84, but on many items processors responded similarly to each other. An interesting point in the data was that 75.00% of fruit and vegetable processors responded that sustainable agriculture is more "like me" than "unlike me," but only 31.25% of processors were certified sustainable, and of those who were not certified sustainable, only three had plans in place to expand promotion or production of certified sustainable products. Also of interest was that differences in means among processors who were certified sustainable, those who were not certified sustainable, and those who did not know about sustainable certification were seen, but there did not seem to be a trend toward one end of the spectrum or the other based on certification status. In fact, for the word pair "like me/unlike me" those who did not know about sustainable certification had a lower mean (i.e., more "like me") than either of the other two groups. That could have been a result of the small number of processors who did not know about sustainable certification (n=4), nonetheless it was an unexpected result.

The groupings resulting from the factor analysis were not surprising. It makes sense that fruit and vegetable processors who considered sustainable agriculture simple and clear also considered it to be like them. It was interesting that those who considered it to be more rural than urban also considered it more open and minimizing risk.

Interestingly the majority of certified and non-certified fruit and vegetable processors considered the sustainable certification process progressive, complicated, and

challenging, even confusing, but they also considered it to be valuable, advantageous, and profitable. Regarding those adjectives, non-certified processors' responses varied more than certified processors' responses. Those responses coincided with responses regarding sustainable agriculture and the fact that processors agreed with most statements about the benefits of processing certified sustainable fruits and vegetables. Their responses do not, however, coincide with the fact that most were not certified sustainable and of those who were not certified sustainable a small number had plans to increase production or promotion of certified sustainable products.

Fruit and vegetable processors indicated they agreed with the majority of statements related to the benefits of processing certified sustainable fruits and vegetables. Interestingly, the majority of processors were not certified and did not have plans in place to expand production or promotion of certified sustainable products. Seventy-eight percent (25) of processors agreed with the statement "processing certified sustainable products satisfies a market demand." This is inconsistent with Loureiro et al. (2002) who concluded that consumers may not differentiate between certified sustainable and organic labels, and therefore may not acknowledge the benefits of sustainable certification. They not only found that consumers may "consider organic … to be an even safer and more environmentally friendly alternative" (Loureiro et al., 2002, p. 215), but also that consumers were "only willing to pay a small premium" (p. 215) for the certified sustainable product.

While 90.63% (29) of processors disagreed or strongly disagreed with the statement "my business does not have the capability to meet the sustainable certification requirements," 65.63% (21) agreed or strongly agreed with the statement "there is a lack

of grower participation in the sustainable certification programs." While data were not collected to specifically address *why* processors were not certified, this comparison indicates it is not because of the stringent requirements but could in part be related to lack of grower participation. Additionally, 84.38% (27) of processors agreed or strongly agreed with the statement "processing certified sustainable products increases costs," but only 43.75% (14) agreed or strongly agreed that "processing certified sustainable products increases profits" is a benefit of processing certified sustainable fruits and vegetables. Processors' perceptions that processing certified sustainable products increases costs but may not increase profits could also help explain why only 31.25% (10) were certified sustainable.

Recommendations

Research should continue in the specialized area of sustainable certification and food labels resulting from such certification. While research has shown that marketing campaigns and interventions increase consumers' awareness of the sustainable certification label and products (Robinson et al., 2002), there was no evidence to show that actual shopping behavior was altered. Additional research should be conducted to determine what level of financial investment in marketing is necessary to influence consumers' buying behaviors to sell certified sustainable products.

The Theory of Planned Behavior relies on measurements of subjects' attitudes, perceived behavioral control, and subjective norms associated with the specified behavior (Ajzen, 1991). In this case, the behavior of interest was fruit and vegetable processors' behavior regarding sustainable certification. This study measured fruit and vegetable

processors' attitudes toward sustainable agriculture and the sustainable certification process, which provide the first piece of the puzzle toward determining their intention to act (i.e., carry out the behavior). Further research should be conducted to determine fruit and vegetable processors' perceived behavioral control and subjective norms related to sustainable certification. Determining these factors will provide measurements of the components needed to move through the Theory of Planned Behavior Model (Aizen, 2006), which would result in conclusions about processors' intentions to pursue sustainable certification.

One of the first steps in determining fruit and vegetable processors' subjective norms needs to be determining *who* influences decisions made by processors. In other words, who is establishing the subjective norms and whose opinions do decision makers care about and pay attention too? Before valid conclusions can be made about the subjective norms processors perceive regarding sustainable certification, research needs to determine from where those outside pressures do or might come.

Additional research should be conducted that specifically evaluates how fruit and vegetable processors respond to what their competitors are doing with regard to sustainable certification. The data collected for this study provided a glimpse at what fruit and vegetable processors perceive their competitors are doing with regard to promoting and expanding processing of certified sustainable products. That information should continue to be fleshed out, and future research should determine whether that information is indicative of industry trends and whether statements about competitors can be used to evaluate respondents' potential actions themselves.

Oregon's fruit and vegetable processors agreed with most of the benefits and incentives to processing certified sustainable fruits and vegetables. However, the majority of those processors were not certified sustainable, and of those who had plans to expand production or promotion of certified sustainable fruits and vegetables, only three were not already certified. A qualitative investigation would capture decision makers' opinions about the complexities involved in deciding whether to seek sustainable certification.

Continued research in this area should also work to determine the actual increase in production cost to certified sustainable processors and the actual value that results from sustainable certification. This information would contribute information about the actual economic impact of sustainable certification on food processors.

Finally, this study should be replicated in other regions of the United States to determine whether Oregon food processors' attitudes are unique or if they coincide with food processors' in other areas of the country.

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APPENDIX A

INSTITUTIONAL REVIEW BOARD

Oklahoma State University Institutional Review Board

Date:	Tuesday, November 27, 2007
IRB Application No	AG0746
Proposal Title:	Oregon Food Processors' Attitudes Toward Processing Certified Sustainable Fruits and Vegetables
Reviewed and Processed as:	Exempt

Status Recommended by Reviewer(s): Approved Protocol Expires: 11/26/2008

Principal Investigator(s

Kelly Strawn
322 W. Matthews Ave
Stillwater, OK 74075

Dwayne Cartmell
448 Ag Hall
Stillwater, OK 74078

The IRB application referenced above has been approved. It is the judgment of the reviewers that the rights and welfare of individuals who may be asked to participate in this study will be respected, and that the research will be conducted in a manner consistent with the IRB requirements as outlined in section 45 CFR 46.

☑ The final versions of any printed recruitment, consent and assent documents bearing the IRB approval stamp are attached to this letter. These are the versions that must be used during the study.

As Principal Investigator, it is your responsibility to do the following:

1. Conduct this study exactly as it has been approved. Any modifications to the research protocol must be submitted with the appropriate signatures for IRB approval.
2. Submit a request for continuation if the study extends beyond the approval period of one calendar year. This continuation must receive IRB review and approval before the research can continue.
3. Report any adverse events to the IRB Chair promptly. Adverse events are those which are unanticipated and impact the subjects during the course of this research; and
4. Notify the IRB office in writing when your research project is complete.

Please note that approved protocols are subject to monitoring by the IRB and that the IRB office has the authority to inspect research records associated with this protocol at any time. If you have questions about the IRB procedures or need any assistance from the Board, please contact Beth McTernan in 219 Cordell North (phone: 405-744-5700, beth.mcternan@okstate.edu).

Sincerely,

Sue C. Jacobs, Chair
Institutional Review Board

APPENDIX B

QUESTIONNAIRE

Definitions

This survey pertains to sustainable certification, which is *not* identical to organic certification. For the purpose of the questionnaire, please use the following definitions:

Sustainable Agriculture: A system of production practices that are specific to individual sites and satisfy human food and fiber needs while enhancing environmental quality, using non-renewable resources efficiently, sustaining the economic viability of farm operations, and enhancing the quality of life for farmers and society as a whole.

Examples of sustainable agricultural practices include use of crop rotation, soil and water conserving tillage systems such as no-till planting methods, and integrated pest management.

(based on the *Agriculture Dictionary* online and the *Food, Agriculture, Conservation, and Trade Act of 1990*)

Certified Sustainable: Food processor that has passed inspection by a third-party certifying agency based on standards of product purity and nutritional value, quality control and food safety, water and energy resource management, waste management, safe and fair working conditions, and commitment to continuous improvement of these practices (based on Food Alliance handler certification standards, www.foodalliance.org).

Sustainable Certification: Process toward achieving certified sustainable status.

To refer to these definitions during the questionnaire, you may click on the term, highlighted as a hyperlink.

Example: sustainable agriculture

Proceed

Page 1 of 7

On each line, read the word pair and click the bubble on the continuum that most closely describes your definition of sustainable agriculture.

Traditional	○	○	○	○	○	○	○	Progressive
Simple	○	○	○	○	○	○	○	Complicated
Like Me	○	○	○	○	○	○	○	Unlike Me
Challenging	○	○	○	○	○	○	○	Simple
Clear	○	○	○	○	○	○	○	Confusing
Structured	○	○	○	○	○	○	○	Unstructured
Systematic	○	○	○	○	○	○	○	Unsystematic
Active	○	○	○	○	○	○	○	Passive
Closed	○	○	○	○	○	○	○	Open
Taking Risk	○	○	○	○	○	○	○	Minimizing Risk
Challenging	○	○	○	○	○	○	○	Cautious
Neutrality	○	○	○	○	○	○	○	Advocacy
Rural	○	○	○	○	○	○	○	Urban

Next Page

On each line, read the word pair and click the bubble on the continuum that most closely describes your definition of the sustainable certification process.

Traditional	○	○	○	○	○	○	○	Progressive
Simple	○	○	○	○	○	○	○	Complicated
Challenging	○	○	○	○	○	○	○	Simple
Clear	○	○	○	○	○	○	○	Confusing
Systematic	○	○	○	○	○	○	○	Unsystematic
Generalization	○	○	○	○	○	○	○	Specialization
Taking Risk	○	○	○	○	○	○	○	Minimizing Risk
Advantageous	○	○	○	○	○	○	○	Not Advantageous
Challenging	○	○	○	○	○	○	○	Cautious
Flexible	○	○	○	○	○	○	○	Rigid
Valuable	○	○	○	○	○	○	○	Valueless
Profitable	○	○	○	○	○	○	○	Not Profitable

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Indicate the degree to which you agree or disagree with the following statements.

SA = Strongly Agree; A = Agree; D = Disagree; SD = Strongly Disagree

	SA	A	D	SD
My competitors are aggressively producing materials promoting sustainable certification.	☐	☐	☐	☐
My competitors have plans to expand promotion and production of certified sustainable products.	☐	☐	☐	☐

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Page 4 of 7

Indicate the degree to which you agree or disagree with the following statements about the ***benefits*** of certified sustainable fruits and vegetables.

SA = Strongly Agree; A = Agree; D = Disagree; SD = Strongly Disagree

	SA	A	D	SD
Processing certified sustainable products increases profits.	☐	☐	☐	☐
Processing certified sustainable products increases customer trust.	☐	☐	☐	☐
Processing certified sustainable products fosters customer loyalty.	☐	☐	☐	☐
Processing certified sustainable products enhances environmental stewardship.	☐	☐	☐	☐
Processing certified sustainable products increases market security.	☐	☐	☐	☐
Processing certified sustainable products satisfies a market demand.	☐	☐	☐	☐
Processing certified sustainable products puts us in a niche market.	☐	☐	☐	☐

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Indicate the degree to which you agree or disagree with the following statements about the ***drawbacks*** to certified sustainable fruits and vegetables.

SA = Strongly Agree; A = Agree; D = Disagree; SD = Strongly Disagree

	SA	A	D	SD
Processing certified sustainable products decreases profits.	☐	☐	☐	☐
Processing certified sustainable products increases costs.	☐	☐	☐	☐
Processing certified sustainable products increases economic risks.	☐	☐	☐	☐
There is a lack of participation in the sustainable certification programs.	☐	☐	☐	☐
My business does not have the capability to meet the sustainable certification requirements.	☐	☐	☐	☐

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Indicate the degree to which you agree or disagree with the following statements about the ***incentives*** to process certified sustainable fruits and vegetables.

SA = Strongly Agree; A = Agree; D = Disagree; SD = Strongly Disagree

	SA	A	D	SD
Processing certified sustainable products will put us in a niche market.	☐	☐	☐	☐
Processing certified sustainable products will increase customer trust.	☐	☐	☐	☐
Processing certified sustainable products will satisfy a market demand.	☐	☐	☐	☐
Processing certified sustainable products will increase profits.	☐	☐	☐	☐
Processing certified sustainable products will enhance environmental stewardship.	☐	☐	☐	☐
Processing certified sustainable products will foster customer loyalty.	☐	☐	☐	☐
Processing certified sustainable products will coincide with my progressive management style.	☐	☐	☐	☐
Processing certified sustainable products will increase market security.	☐	☐	☐	☐

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Page 6 of 7

Indicate the degree to which you agree or disagree with the following statements about the ***incentives*** to process certified sustainable fruits and vegetables.

SA = Strongly Agree; A = Agree; D = Disagree; SD = Strongly Disagree

	SA	A	D	SD
Processing certified sustainable products will put us in a niche market.	☐	☐	☐	☐
Processing certified sustainable products will increase customer trust.	☐	☐	☐	☐
Processing certified sustainable products will satisfy a market demand.	☐	☐	☐	☐
Processing certified sustainable products will increase profits.	☐	☐	☐	☐
Processing certified sustainable products will enhance environmental stewardship.	☐	☐	☐	☐
Processing certified sustainable products will foster customer loyalty.	☐	☐	☐	☐
Processing certified sustainable products will coincide with my progressive management style.	☐	☐	☐	☐
Processing certified sustainable products will increase market security.	☐	☐	☐	☐

Next Page

Business Profile

Please select only one response, unless otherwise noted.

1. In what region of Oregon is your processing facility located?

- ☐ Coast (Clatsop, Tillamook, Lincoln, W Lane, NW Douglas, Coos and Curry Counties)
- ☐ Willamette Valley (including E Lane, Columbia and Multnomah Counties)
- ☐ Hood River Valley (Hood River, Wasco, Jefferson, Sherman, Gilliam and Wheeler Counties)
- ☐ Southern (Douglas, Josephine, S Klamath and SW Lake Counties)
- ☐ Columbia Basin (Umatilla, Union, Wallowa, Baker, NE Malheur and NE Grant Counties)
- ☐ Southeast (Deschutes, Crook, NE Malheur, N and E Lake, Harney and Malheur Counties, except NE Malheur)

2. In what region(s) of Oregon are your growers located? *(check all that apply)*

- ☐ Coast (Clatsop, Tillamook, Lincoln, W Lane, NW Douglas, Coos and Curry Counties)
- ☐ Willamette Valley (including E Lane, Columbia and Multnomah Counties)
- ☐ Hood River Valley (Hood River, Wasco, Jefferson, Sherman, Gilliam and Wheeler Counties)
- ☐ Southern (Douglas, Josephine, S Klamath and SW Lake Counties)
- ☐ Columbia Basin (Umatilla, Union, Wallowa, Baker, NE Malheur and NE Grant Counties)
- ☐ Southeast (Deschutes, Crook, NE Malheur, N and E Lake, Harney and Malheur Counties, except NE Malheur)

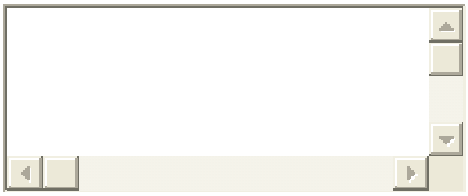
3. How many locations does your business operate?

- [ ] 1
- [ ] 2
- [ ] 3-5
- [ ] More than five

4. How many full-time persons does your business employ?

5. In what year was your business established?

6. Please list the fruits and/or vegetables that were processed at your facility/facilities in 2007.



7. Approximately how many tons of fruit and/or vegetables are processed at your facility annually?

8. How is your business organized?

- [ ] Sole Proprietorship
- [ ] Partnership
- [ ] Corporation (including cooperatives)

If your business is a corporation, what type is it?

9. Is your facility certified sustainable? If no, skip to question 11.

- [ ] Yes
- [ ] No
- [ ] Don't know about sustainable certification

If yes, what is the certifying agency?

10. How many tons of certified fruits and/or vegetables are processed at your facility annually?

11. What percent of those who purchase your products are...

a) Local? ____ %
b) Regional? ____ %
c) National? ____ %
d) International? ____ %

12. What percent of your gross sales are spent on marketing materials promoting sustainable certification?

- ☐ none
- ☐ < 1%
- ☐ 1-2%
- ☐ 2.1-5%
- ☐ 5.1-10%
- ☐ 10.1-20%
- ☐ 20.1-30%
- ☐ >30%

13. What percent of your marketing resources are used to market sustainable certification?

- ☐ none
- ☐ < 1%
- ☐ 1-2%
- ☐ 2.1-5%
- ☐ 5.1-10%

☐ 10.1-20%
☐ 20.1-30%
☐ >30%

14. Do you have a plan in place to expand promotion or production of certified sustainable products?

☐ Yes ☐ No

15. What are your average gross sales?

$

Thank you for taking the time to complete the survey. Please indicate below if you would like to receive a copy of the results of this study. The results will be sent to the e-mail address you provided.

☐ Yes ☐ No

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You have completed the survey. Thank you again for your time.

APPENDIX C

PILOT QUESTIONNAIRE

Definitions

This survey pertains to sustainable certification, which is *not* identical to organic certification. For the purpose of the questionnaire, please use the following definitions:

Sustainable Agriculture: A system of production practices that are specific to individual sites and satisfy human food and fiber needs while enhancing environmental quality, using non-renewable resources efficiently, sustaining the economic viability of farm operations, and enhancing the quality of life for farmers and society as a whole.

Examples of sustainable agricultural practices include use of crop rotation, soil and water conserving tillage systems such as no-till planting methods, and integrated pest management.

(based on the *Agriculture Dictionary* online and the *Food, Agriculture, Conservation, and Trade Act of 1990*)

Certified Sustainable: Food processor that has passed inspection by a third-party certifying agency based on standards of product purity and nutritional value, quality control and food safety, water and energy resource management, waste management, safe and fair working conditions, and commitment to continuous improvement of these practices (based on Food Alliance handler certification standards, www.foodalliance.org).

Sustainable Certification: Process toward achieving certified sustainable status.

To refer to these definitions during the questionnaire, you may click on the term, highlighted as a hyperlink.

Example: sustainable agriculture

Proceed

On each line, read the word pair and click the bubble on the continuum that most closely describes your definition of sustainable agriculture.

Traditional	○	○	○	○	○	○	○	Progressive
Simple	○	○	○	○	○	○	○	Complicated
Like Me	○	○	○	○	○	○	○	Unlike Me
Challenging	○	○	○	○	○	○	○	Simple
Clear	○	○	○	○	○	○	○	Confusing
Structured	○	○	○	○	○	○	○	Unstructured
Systematic	○	○	○	○	○	○	○	Unsystematic
Active	○	○	○	○	○	○	○	Passive
Closed	○	○	○	○	○	○	○	Open
Taking Risk	○	○	○	○	○	○	○	Minimizing Risk
Challenging	○	○	○	○	○	○	○	Cautious
Neutrality	○	○	○	○	○	○	○	Advocacy
Rural	○	○	○	○	○	○	○	Urban

Next Page

On each line, read the word pair and click the bubble on the continuum that most closely describes your definition of the sustainable certification process.

Traditional	○	○	○	○	○	○	○	Progressive
Simple	○	○	○	○	○	○	○	Complicated
Challenging	○	○	○	○	○	○	○	Simple
Clear	○	○	○	○	○	○	○	Confusing
Systematic	○	○	○	○	○	○	○	Unsystematic
Generalization	○	○	○	○	○	○	○	Specialization
Taking Risk	○	○	○	○	○	○	○	Minimizing Risk
Not Advantageous	○	○	○	○	○	○	○	Advantageous
Cautious	○	○	○	○	○	○	○	Challenging
Rigid	○	○	○	○	○	○	○	Flexible
Valuable	○	○	○	○	○	○	○	Valueless
Not Profitable	○	○	○	○	○	○	○	Profitable

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Page 3 of 7

Indicate the degree to which you agree or disagree with the following statements.

SA = Strongly Agree; A = Agree; D = Disagree; SD = Strongly Disagree

	SA	A	D	SD
My competitors are aggressively producing materials promoting sustainable certification.	☐	☐	☐	☐
My competitors have plans to expand promotion and production of certified sustainable products.	☐	☐	☐	☐

Next Page

Page 4 of 7

Indicate the degree to which you agree or disagree with the following statements about the ***benefits*** of certified sustainable fruits and vegetables.

SA = Strongly Agree; A = Agree; D = Disagree; SD = Strongly Disagree

	SA	A	D	SD
Processing certified sustainable products increases profits.	☐	☐	☐	☐
Processing certified sustainable products increases customer trust.	☐	☐	☐	☐
Processing certified sustainable products fosters customer loyalty.	☐	☐	☐	☐
Processing certified sustainable products enhances environmental stewardship.	☐	☐	☐	☐
Processing certified sustainable products increases market security.	☐	☐	☐	☐
Processing certified sustainable products satisfies a market demand.	☐	☐	☐	☐
Processing certified sustainable products puts us in a niche market.	☐	☐	☐	☐

Next Page

Page 5 of 7

Indicate the degree to which you agree or disagree with the following statements about the ***drawbacks*** to certified sustainable fruits and vegetables.

SA = Strongly Agree; A = Agree; D = Disagree; SD = Strongly Disagree

	SA	A	D	SD
Processing certified sustainable products decreases profits.	☐	☐	☐	☐
Processing certified sustainable products increases costs.	☐	☐	☐	☐
Processing certified sustainable products increases economic risks.	☐	☐	☐	☐
There is a lack of participation in the sustainable certification programs.	☐	☐	☐	☐
My business does not have the capability to meet the sustainable certification requirements.	☐	☐	☐	☐

Next Page

Page 6 of 7

Indicate the degree to which you agree or disagree with the following statements about the ***incentives*** to process certified sustainable fruits and vegetables.

SA = Strongly Agree; A = Agree; D = Disagree; SD = Strongly Disagree

	SA	A	D	SD
Processing certified sustainable products will put us in a niche market.	☐	☐	☐	☐
Processing certified sustainable products will increase customer trust.	☐	☐	☐	☐
Processing certified sustainable products will satisfy a market demand.	☐	☐	☐	☐
Processing certified sustainable products will increase profits.	☐	☐	☐	☐
Processing certified sustainable products will enhance environmental stewardship.	☐	☐	☐	☐
Processing certified sustainable products will foster customer loyalty.	☐	☐	☐	☐
Processing certified sustainable products will coincide with my progressive management style.	☐	☐	☐	☐
Processing certified sustainable products will increase market security.	☐	☐	☐	☐

Next Page

Business Profile

Please select only one response, unless otherwise noted.

1. In what region of Washington is your processing facility located?

- ☐ Northwest
- ☐ Northeast
- ☐ Southwest
- ☐ Southeast
- ☐ Central

2. In what region(s) of Washington are your growers located? *(check all that apply)*

- ☐ Northwest
- ☐ Northeast
- ☐ Southwest
- ☐ Southeast
- ☐ Central

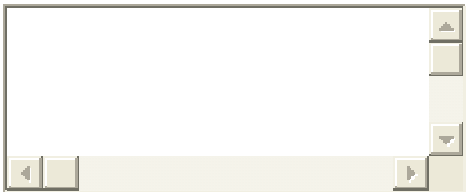
3. How many locations does your business operate?

- ☐ 1
- ☐ 2
- ☐ 3-5
- ☐ More than five

4. How many full-time persons does your business employ?

5. In what year was your business established?

6. Please list the fruits and/or vegetables that were processed at your facility/facilities in 2007.



7. Approximately how many tons of fruit and/or vegetables are processed at your facility annually?

8. How is your business organized?

- Sole Proprietorship
- Partnership
- Corporation (including cooperatives)

If your business is a corporation, what type is it?

9. Is your facility certified sustainable? If no, skip to question 11.

Yes No Don't know about sustainable certification

If yes, what is the certifying agency?

10. How many tons of certified fruits and/or vegetables are processed at your facility annually?

11. What percent of those who purchase your products are...

a) Local? _____ %

b) Regional? _____ %

c) National? _____ %

d) International? _____ %

12. What percent of your gross sales are spent on marketing materials promoting sustainable certification?

- ☐ none
- ☐ < 1%
- ☐ 1-2%
- ☐ 2.1-5%
- ☐ 5.1-10%
- ☐ 10.1-20%
- ☐ 20.1-30%
- ☐ >30%

13. What percent of your marketing resources are used to market sustainable certification?

- ☐ none
- ☐ < 1%
- ☐ 1-2%
- ☐ 2.1-5%
- ☐ 5.1-10%
- ☐ 10.1-20%
- ☐ 20.1-30%
- ☐ >30%

14. Do you have a plan in place to expand promotion or production of certified sustainable products?

☐ Yes ☐ No

15. What are your average gross sales?

$

Thank you for taking the time to complete the survey. Please indicate below if you would like to receive a copy of the results of this study. The results will be sent to the e-mail address you provided.

☐ Yes ☐ No

Next Page

You have completed the survey. Thank you again for your time.

APPENDIX D

INITIAL CONTACT (TELEPHONE) SCRIPT

(INCLUDING PILOT)

Telephone script to solicit participation in the study:

May I please speak with your plant owner or manager?

Hi. My name is Kellie Strawn, and I am an Oregon State graduate. I am now working on my master's degree at Oklahoma State. I am completing a research study on Oregon Food Processors' Attitudes Toward Processing Certified Sustainable Fruits and Vegetables and wondered if you would be willing to contribute to my study by completing a 10-15 minute online survey. If so, I can e-mail you a link to the survey.

You will be asked to enter your e-mail address, which will only be used to determine whether you have completed the survey.

Telephone script to solicit participation in the study:

May I please speak with your plant owner or manager?

Hi. My name is Kellie Strawn, and I am an Oregon State graduate. I am now working on my master's degree at Oklahoma State. I am completing a research study on Oregon Food Processors' Attitudes Toward Processing Certified Sustainable Fruits and Vegetables and wondered if you would be willing to contribute to my pilot test in Washington by completing a 10-15 minute online survey. If so, I can e-mail you a link to the survey.

You will be asked to enter your e-mail address, which will only be used to determine whether you have completed the survey.

APPENDIX E

INFORMED CONSENT/INTRODUCTORY E-MAIL

(INCLUDING PILOT)

E-mail with informed consent information that will accompany link to online survey.

Thank you for agreeing to complete this survey, which is intended to provide information about Oregon food processors' attitudes toward processing certified sustainable fruits and vegetables. I am conducting this study as part of the requirements of an agricultural communications master's degree program. As the contact person for your processing facility, you will be asked to answer demographic questions about your facility as well as questions addressing your thoughts on sustainable agriculture.

Your participation in this study is voluntary, and you may decide to exit the survey Web site at any time. There are no known risks associated with this project which are greater than those ordinarily encountered in daily life.

Upon completion of the survey, you will have the opportunity to request a copy of the results of this study.

The information collected from this survey will be kept private. All reports will discuss group findings and will not include information that will identify you. All records will be stored securely and only the researcher and individuals responsible for research oversight will have access to the records.

If you have questions about this research, please contact Kellie Strawn at 541-231-2654, or kellie.strawn@okstate.edu.

If you have questions about your rights as a research volunteer, you may contact Dr. Sue C. Jacobs, IRB Chair, 219 Cordell North, Stillwater, OK 74078, 405-744-1676 or irb@okstate.edu.

Click on the following link to consent to participate in this study and to begin the survey
http://survey.okstate.edu

E-mail with informed consent information that will accompany link to online survey.

Thank you for agreeing to participate in a pilot test by completing this survey, which is intended to provide information about Washington food processors' attitudes toward processing certified sustainable fruits and vegetables. I am conducting this study as part of the requirements of an agricultural communications master's degree program. As the contact person for your processing facility, you will be asked to answer demographic questions about your facility as well as questions addressing your thoughts on sustainable agriculture.

Your participation in this study is voluntary, and you may decide to exit the survey Web site at any time. There are no known risks associated with this project which are greater than those ordinarily encountered in daily life.

The information collected from this survey will be kept private. All reports will discuss group findings and will not include information that will identify you. All records will be stored securely and only the researcher and individuals responsible for research oversight will have access to the records.

If you have questions about this research, please contact Kellie Strawn at 541-231-2654, or kellie.strawn@okstate.edu.

If you have questions about your rights as a research volunteer, you may contact Dr. Sue C. Jacobs, IRB Chair, 219 Cordell North, Stillwater, OK 74078, 405-744-1676 or irb@okstate.edu.

Click on the following link to consent to participate in this study and to begin the survey http://survey.okstate.edu

APPENDIX F

QUESTIONNAIRE COVER (WEB) PAGE

(INCLUDING PILOT)

Oregon Food Processors' Attitudes Toward Processing Certified Sustainable Fruits and Vegetables

Thank you for helping us by completing this survey!

Oregon's farms and ranches are evolving as Oregon agriculture continues to adapt to changes in technology, consumer demands and governmental regulations. As a native Oregonian, I am interested in the prosperity of Oregon agriculture and in discovering how its farmers and ranchers can maintain profitability while providing high quality food products. My goal is to provide Oregon farmers a snapshot of what one sector of the industry, Oregon food processors, believes about sustainable agriculture and the sustainable certification process.

Completing this survey will take approximately 15 minutes. Upon completion of the survey, you will have the opportunity to request a copy of the results of this study. *Your responses to the questions will remain confidential*. This survey is designed to evaluate Oregon food processors' attitudes toward processing certified sustainable fruits and vegetables. If you have any questions about this survey or research project, please feel free to contact me at 541.231.2654 or by e-mail at kellie.strawn@okstate.edu.

INSTRUCTIONS

Please follow the instructions for each section/question on the survey. To begin the survey, please enter your e-mail address in the space below and click the login button.

Thank you for your time.

Kellie Strawn

Washington Food Processors' Attitudes Toward Processing Certified Sustainable Fruits and Vegetables

Thank you for helping us by completing this survey!

Washington's farms and ranches are evolving as Washington agriculture continues to adapt to changes in technology, consumer demands and governmental regulations. As a native Oregonian, I am interested in the prosperity of agriculture in the Northwest and in discovering how its farmers and ranchers can maintain profitability while providing high quality food products. My goal is to provide farmers in the Northwest a snapshot of what one sector of the industry, Washington food processors, believes about sustainable agriculture and the sustainable certification process.

Completing this survey will take approximately 15 minutes. Upon completion of the survey, you will have the opportunity to request a copy of the results of this study. *Your responses to the questions will remain confidential*. This survey is designed to evaluate Washington food processors' attitudes toward processing certified sustainable fruits and vegetables. If you have any questions about this survey or research project, please feel free to contact me at 541.231.2654 or by e-mail at kellie.strawn@okstate.edu.

INSTRUCTIONS

Please follow the instructions for each section/question on the survey. To begin the survey, please enter your e-mail address in the space below and click the login button.

Thank you for your time.

Kellie Strawn

APPENDIX G

FOLLOW-UP E-MAIL

E-mail and phone follow-up, will be sent seven and fourteen days after initial contact is made. Phone calls will be made 21 days after initial contact is made.

Hi. We talked on the phone a couple of weeks ago about an online survey that I am conducting as part of my master's thesis research. I appreciate your willingness to participate in this survey. I am including the link to the survey below, for your convenience. Please let me know if you have any questions or have trouble entering the survey site.

Thank you again for agreeing to participate!

Kellie Strawn
kellie.strawn@okstate.edu
541.231.2654

VITA

Kellie Ann Strawn

Candidate for the Degree of

Master of Science

Thesis: OREGON FOOD PROCESSORS' ATTITUDES TOWARD PROCESSING CERTIFIED SUSTAINABLE FRUITS AND VEGETABLES

Major Field: Agricultural Communications

Biographical:

Personal Data: Born in 1982 in Silverton, Oregon, to David and JoAnn King. Raised on a family farm with three sisters and a brother. Married Jordan Strawn March 2005.

Education: Silverton High School, High School Diploma, Valedictorian, June, 2000. Oregon State University, Bachelor of Science, General Agriculture, June, 2005. Completed the requirements for the Master of Science in Agricultural Communications at Oklahoma State University, Stillwater, Oklahoma, in May 2008.

Experience: Several years working on the family farm. Wilco Farm Stores, May 2001-July 2006. Oregon Agriculture in the Classroom Intern, September 2003-June 2005. Oklahoma 4-H Foundation/4-H Program, Coordinator of Special Programs and Promotions, August 2006-May 2008.

Professional Memberships: Association for Communication Excellence

Name: Kellie Ann Strawn Date of Degree: May, 2008

Institution: Oklahoma State University Location: Stillwater, Oklahoma

Title of Study: OREGON FOOD PROCESSORS' ATTITUDES TOWARD PROCESSING CERTIFIED SUSTAINABLE FRUITS AND VEGETABLES

Pages in Study: 117 Candidate for the Degree of Master of Science

Major Field: Agricultural Communications

Scope and Method of Study: Oregon fruit and vegetable processors' attitudes toward processing certified sustainable fruits and vegetables were measured using online survey methods. The population consisted of those who were listed in the 2006 Judges Food Processors of North America Guide and those whose primary activity was registered with the Oregon Department of Agriculture as processing fruits and vegetables.

Findings and Conclusions: In general, fruit and vegetable processors agreed with the benefits and incentives to processing certified sustainable fruits and vegetables and disagreed with the drawbacks. Only one-third of processors were certified sustainable and the majority did not have plans in place to expand production or promotion of certified sustainable products. The majority of processors spent none of their gross sales or marketing resources to market sustainable certification and most did not perceive their competitors were marketing sustainable certification. Recommendations for further research in the area of sustainable certification were made.

ADVISER'S APPROVAL: Dr. D. Dwayne Cartmell