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Taking back the commons: Motivating factors for the local control of GMOs

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Taking back the commons: Motivating factors for the local control of GMOs

by

Lydia Rae Levinson

A thesis submitted to the graduate faculty

in partial fulfillment of the requirements for the degrees of

MASTER OF SCIENCE

MASTER OF COMMUNITY AND REGIONAL PLANNING

Co-majors: Sustainable Agriculture; Community and Regional Planning

Program of Study Committee:

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Iowa State University

Ames, Iowa

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DEDICATION

In memory of Shine Levinson. Thank you for all of the love and light.

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ABSTRACT

Issues of food policy, agricultural policy, and environmental policy all converge in the discussion of genetically modified organisms (GMOs). Presently, there is no established consensus as to the safety of GMO foods or the long-term effects that genetically engineered crops might have on human and environmental health. While state initiatives to label GMOs have recently received much media attention, these efforts have been largely defeated by fierce industry opposition. Yet in communities across the country, citizens are working collectively to reframe the issue of GMO policy and resist the corporatization of agriculture by advocating for local land use controls that ban the propagation of genetically modified organisms. Ultimately, these bans are less about GMOs than they are about communities reasserting their authority to build sustainable, local farm and food systems. Through a case-study methodology using structured interviews with key informants and content analysis of archival documents, this study explores the motivating factors that led citizens and farmers to pursue and enact such local ordinances in Mendocino County, California and Jackson County, Oregon. At the outset of the qualitative analysis, it was hypothesized that actors were responding to perceived environmental, social, and economic threats that cross-pollination poses to organic farmers and others that produce non-genetically engineered plants.

Analysis of the primary data from interview respondents revealed a number of emergent themes that were triangulated with the content analysis of secondary sources. These themes are supported by the theory and literature concerning civic agriculture and alternative agrifood system movements. The findings of the research indicate that campaign supporters were acting upon strongly held values and beliefs concerning GMOs and corporate agribusiness, as well as

the local connections between people, land, and food. While concerns over cross-pollination were frequently expressed, sources indicated that they were primarily motivated by the following thematic categories: concerns over ‘Corporate Intrusion’, a desire to ‘Preserve Locally Embedded Agriculture’, and the interests of the ‘Local Economy’. This examination of the motivations behind local GMO bans offers insight into the ways that communities are ‘taking back the commons’ by reclaiming their legal authority to build sustainable farm and food systems.

CHAPTER 1. INTRODUCTION

Several lines of evidence suggest that the agricultural landscape and production system is designed primarily by global agribusiness corporations. Conservation policy will move forward only when consumers and taxpayers shrug off the myth of the farmer as designer and pressure agribusiness interests to take responsibility for a healthy agricultural landscape and healthy food (Jackson, 2008, p.31).

In her essay “Who ‘Designs’ the Agricultural Landscape?” Laura Jackson argues that global agribusiness corporations are largely responsible for the design of the Upper Midwest ‘Cornbelt’ region’s landscape (Jackson, 2008). Yet elsewhere in the country, citizens are working collectively to change the course of local land use decisions and resist the corporatization of agriculture by advocating for community-wide bans on the propagation of genetically modified organisms (GMOs). Ultimately, these bans are less about GMOs than they are about communities reasserting their authority to build sustainable, local farm and food systems.

According to the Organic Consumers Association, nine districts throughout the United States have enacted land use legislation banning genetically modified organisms. At least 19 other districts have enacted ordinances restricting the propagation of genetically engineered crops (Organic Consumers Association, 2013). These policies exist at the municipal, county, and state levels. Most of these ordinances are the result of grassroots citizen-led initiatives, in which local farmers are active participants. In this way, farmers are reclaiming the power to determine the design of the local agricultural landscape.

“Taking Back the Commons”

The title of this thesis invokes Garrett Hardin’s well known parable in which individuals, acting independently and rationally according to their own self-interest, behave in such a way that is contrary to the whole group's long-term best interests by depleting some common resource (Hardin, 1968). The Tragedy of the Commons lends itself well to many of the commonly posed critiques of the dominant industrial agriculture paradigm; particularly arguments against the use of biotechnology. The texts of many of the enacted ordinances regulating the propagation of GMOs cite as their impetus a desire to preserve commonly held goods such as seed stocks; native ecosystems; biodiversity; and the capacity to practice non-GMO agriculture without the threat of cross-contamination of genetically altered material. Many of the proponents of these ordinances regard the propagation of GMOs as a threat to the rich diversity of seed and crop varieties that are a part of their locally embedded cultural heritage. At their core, these ordinances effectively regulate seeds; which throughout history have been generally regarded as part of the ‘commons’; the common heritage of mankind that exists in the public domain for all to access freely.

Relevance to the Planning Field

Issues of food policy, agricultural policy, and environmental policy all converge in the discussion of genetically modified organisms. The subject of the local regulation of biotechnology brings in a number of additional issues, such as local governance, local food and agricultural systems, economic development, land use, democracy, and civic engagement; all of which are salient to the field of planning. Agricultural systems are interconnected with local

economic, social and environmental health. Thus, they are as much a component of community infrastructure as housing, transportation, education, and greenspace. Both the nature of the planning profession and the education and expertise of its practitioners justify the inclusion of local agricultural policy and food system planning within the scope of community planning efforts. Addressing issues like public concern over biotechnology affords planners a means of bringing together stakeholders from diverse backgrounds, and as such it presents a valuable opportunity for generating more public involvement in policy decisions. Potential benefits of increased public involvement include the following: building trust for local government, improving representativeness, increasing the legitimacy of decisions, and strengthening community bonds.

The remainder of this chapter comprises two sections: a background section that discusses a number of relevant concepts and terms concerning agricultural biotechnology; and a brief description of the research, including the structure of the thesis and its chapters and an explanation of the sources and methods utilized.

Background

Genetically Modified Organisms

It is important to understand the difference between the process of genetic modification and that of traditional selective plant breeding. The World Health Organization defines genetically modified organisms as “organisms in which the genetic material (DNA) has been altered in a way that does not occur naturally” (World Health Organization, n.d., para. 1). These alterations occur during a laboratory process by which individual genes are transferred from one organism to another, often between entirely different species. For example, genes from a

bacterium that kills certain types of insects, such as *Bacillus thuringiensis* (Bt), have been inserted into corn and cotton varieties to make them resistant to pests; and genes from fish that are able to survive very cold water temperatures have been inserted in tomato plants to produce fruit that is resistant to freezing (Schmidt, 2005). This method of genetic transfer is known as horizontal gene transfer, which differs significantly from the process of vertical gene transfer that occurs during traditional plant breeding when a plant inherits genetic material from either the parent plant or a closely related plant of the same species through sexual or asexual reproduction (Rizzi et al., 2011). Artificial horizontal gene transfer is a form of genetic engineering (GE) and falls within the realm of biotechnology.

Worldwide, genetically engineered crops account for more than 175 million hectares of farmland in 27 countries. Since GMO crops were first made commercially available in 1996, this number has increased by an annual rate of 3.5%, from 1.7 million hectares (James, 2013). Most of the commercially available GE crops are engineered to be either insect-resistant (as in the case of the Bt crops mentioned above) or herbicide-resistant (Center for Food Safety, 2013). Currently, the majority of the four major commodity crops grown in the United States are genetically engineered. According to a recent report published by the Center for Food Safety, GMO crops now account for 93% of domestically produced soybeans; 88% of cotton; 86% of corn; and 64% of canola. Additionally, an estimated 75% of all processed foods in the U.S. contain genetically engineered ingredients (Center for Food Safety, 2013).

Potential Benefits of Genetically Modified Crops

A review of the scientific literature in support of GMOs suggests that these crops may potentially offer significant advantages over conventionally produced varieties. Perhaps the most commonly argued claim in favor of biotechnology is that it is needed to feed the world's growing

population. Genetically engineered crops have been widely heralded as a means of boosting yields and increasing the nutritional content of staple foods to better feed those living in developing countries (Barrows et al., 2014; Sexton & Zilberman, 2011; Potrykus, 2012).

Another potential benefit of GMOs is their ability to control weeds, pests, and plant diseases. As previously mentioned, many GE crop varieties are engineered to be resistant to pests and to tolerate herbicides and pesticides. Resistance to insect pests might reduce the need for harmful chemical pesticide applications (Barrows et al., 2014). Along these same lines, proponents argue that the propagation of GE plants that are resistant to specific herbicides with lower toxicity may result in decreased usage of the more toxic herbicide formulations (Sexton & Zilberman, 2011). Since certain GM crops may require less soil tillage than conventional plant varieties, the propagation of such plants might provide a reduction in the amount of greenhouse gas emissions associated with agricultural production (Paarlberg, 2009).

Future advances in biotechnology may allow farmers to adapt to changing global conditions, as crops might be genetically altered to withstand the effects of cold, heat, drought or flood events, pest migration, and soil salinity (Barrows, 2012; Quaye et al., 2012; Paarlberg, 2010). New GMO varieties currently in development stages may reduce losses of fixed nitrogen in the form of nitrous oxide; which might eventually help to mitigate climate change (Fesenko & Edwards, 2014; Taiz, 2013). Scientists are also investigating the potential for GMO strains that might be utilized to remediate soils contaminated with heavy metals (Kotrba et al., 2011). Finally, GMOs may play an important role in advancing medical technology through the development of pharmaceutical drugs and vaccines (Kayser & Warzecha, 2012).

Potential Risks of Genetically Modified Crops

Despite their many potential benefits, genetic engineering and biotechnology are much contested issues among both the scientific community and the mainstream media. As yet, there is no established consensus regarding the safety of GMO foods or the propagation of genetically engineered crops. However, a review of the scientific literature in opposition to GMOs indicates that cultivation of genetically modified crops may pose serious risks to environmental, human, social, and economic health.

The potential environmental risks posed by genetically engineered crops include the following: declining levels of biodiversity (Heinemann, 2009; Pleasants & Oberhauser, 2012); loss of native seed stocks (Shiva et al., 2011); increases in the application of chemical pesticides, coupled with the compulsory use of environmentally damaging chemical fertilizers (Benbrook, 2012; Gurian-Sherman & Gurwick, 2009); the appearance of new ‘superbugs’ and ‘superweeds’ that are resistant to pesticides and herbicides (Gassman, 2012; Benbrook, 2012); and transgenic contamination of non-GE species (Altieri, 2005; Heinemann, 2009). The USDA is presently considering the approval of new corn and soybean varieties with engineered resistance to the hazardous herbicide, 2,4-D. If these new GMO crops receive approval, use of 2,4-D herbicide is predicted to increase by up to 600% by the year 2020 (U.S. Department of Agriculture, 2013). In addition to environmental concerns, exposure to residues of the toxic chemical pesticides and herbicides associated with the production of GMOs poses potential risks to human health (Benachour & Seralini, 2008; Eriksson et al., 2008; Gasnier et al., 2009).

To date, few published studies have directly tested the safety of GM foods for human consumption. However, the results of what human studies have been conducted suggest that genetically modified foods may pose human health risks. A Canadian study detected significant

levels of an insecticidal protein contained in GM Bt crops, circulating in the blood of pregnant women and in the blood supply of their fetuses, as well as in the blood of non-pregnant women (Aris, & Leblanc, 2011). Another study detected traces of genetically modified DNA in the gastrointestinal bacteria of human subjects fed GM soybean meal; indicating that it may be possible for transgenic material to persist among digestive flora (Netherwood et al., 2004). At least two studies have demonstrated that GM foods elicit immune responses among certain human subjects; which suggests that such foods may cause new food allergies (Yum et al., 2005; Nordlee et al., 1996). In 2000, when genetically modified Bt corn known as StarLink was found to have contaminated the U.S. food supply, at least 28 people reported allergic reactions. At the time, StarLink was approved for use as animal feed but not for human consumption (CDC, 2001). In 1989, the food supplement, L-tryptophan, which is produced using GM bacteria was found to be toxic after killing 37 people and permanently disabling more than 1500 others (Mayeno & Gleich, 1994; U.S. Congress, 1992; Slutsker et al., 1990).

Results of animal research suggests that laboratory mammals fed GMOs may suffer toxic and allergenic effects (Prescott et al., 2005; Seralini et al., 2007; Trabalza-Marinucci et al., 2008); enzyme function disturbances (Tudisco, 2006); organ damage and dysfunction (Dugan et al., 2003; Fares & El-Sayed, 1998; FDA, 2002; Hines, 1993; Kılıç & Akay, 2008; Malatesta et al., 2008; Seralini et al., 2011; Vecchio et al., 2004); as well as digestive, reproductive, and immune system problems (Cyran et al., 2008; Finamore et al., 2008; Trabalza-Marinucci et al., 2008).

GMOs are frequently touted as a means of 'feeding the world' and mitigating world hunger, yet studies demonstrate that genetically engineered crops do not produce higher yields than their traditional counterparts (Gurian-Sherman, 2009; U.S. Department of Agriculture,

2002). Beyond failing to live up to such lofty expectations, GMOs may pose serious social risks; rising costs associated with genetically engineered seeds combined with frequent crop failure may be contributing to rising suicide rates among farmers in India (Ho, 2010; Malone, 2008). In the United States, soybean seed prices have increased by 325% since the introduction of GE seed. Similar price hikes are evident among U.S. corn and cotton seeds. These increases primarily stem from the per-trait “technology fee” premium assessed by GMO seed companies for each GE “trait” within a seed line (Hubbard, 2009). Rapidly increasing seed prices affect farmers’ operating costs, as well as their gross crop income and net return per acre. According to agricultural economist, Dr. Charles Benbrook:

If these GE seed price and income trends continue, the consequences for farmers will be of historic significance, as dollars once earned and retained by farmers are transferred to the seed industry (Benbrook, 2009, p. 4).

In recent decades, the consolidation of commercial GMO seed firms has resulted in a monopoly; presently three agrichemical firms—Monsanto, DuPont, and Syngenta control 53% of the global seed market. As the world’s largest seed firm, Monsanto holds the patents of roughly 86% of GE seeds sold in the United States (Center for Food Safety, 2013). Biotech companies mandate that GMO farmers sign a ‘technology use agreement’, which stipulates that the farmer cannot save the seeds produced from their GE harvest. Not only does this contract effectively force farmers to purchase new seeds for every crop cycle; it also grants the companies full access to the farmers’ records held by third parties, such as the U.S. government (Barker et al., 2013). Farmers that are suspected of violating the technology use agreement are often subject to litigation. As of December 2012, the leading supplier of GMO seeds had filed 142 alleged seed patent infringement lawsuits involving 410 farmers and 56 small farm businesses in 27 states (Center for Food Safety, 2012).

Genetically engineered crops may pose additional economic risks by way of declining American agricultural exports. Upon the previously mentioned discovery of GM StarLink corn in US food products in 2000, the U.S. corn markets experienced considerable disruption (Schmitz et al., 2005). American corn exports have been marginalized by the international market as U.S. farmers are producing biotech varieties that are not approved by the EU and various other countries worldwide (U.S. General Accounting Office, 2001).

Collectively, these hypotheses and preliminary findings would seem to indicate a number of potentially adverse effects of biotechnology. However, presently there is no definitive determination as to the safety of GMOs. For this reason, many members of both the scientific and political communities have recommended the application of the Precautionary Principle in the regulation of genetically engineered organisms.

Precautionary Principle

The Precautionary Principle is commonly applied to discretionary decisions where there is the possibility of harm resulting from a particular course of policy, *and* scientific consensus is lacking. While there is no precise definition of the Principle, scientific uncertainty and prospects of irreversible damage are proposed as important elements (Myhr & Traavik, 2002). The Principle suggests a social responsibility to protect the public from exposure to harm when there exists a plausible risk. Such protections can be relaxed only when there is scientific determination that no harm will result. In the case of GMOs, the argument has been made that the corporate consolidation of the biotech industry has restricted independent scientific research on the subject; inhibiting public scientists from fulfilling their mandated role on behalf of the public good (Dalton, 2002; Pollack, 2009). This sentiment was conveyed in a letter to the Environmental Protection Agency signed by 26 prominent university scientists who expressed

their collective alarm over the research restrictions posed by utility seed patents and industry technology agreements (Pollack, 2009).

International and National Regulation of GMOs

Several dozen countries, including those in the EU, have created GMO-free zones that ban the sale and sometimes the cultivation of GMO foods. At least 27 countries worldwide, including Switzerland, Australia, Austria, China, India, France, Germany, Hungary, Luxembourg, Greece, Bulgaria, Poland, Italy, Mexico, and Russia have banned GMOs entirely. Additionally, approximately 60 countries have established labeling and safety-testing procedures for GMOs (Cummins, 2014).

In the United States, the Environmental Protection Agency (EPA); the Food and Drug Administration (FDA); and the US Department of Agriculture (USDA) are responsible for ensuring the health and safety of GMOS. However, the structure of federal oversight is one that allows the biotech industry to self-regulate (Bongyu, 2009). Agricultural biotech companies are required only to demonstrate that, apart from the transgenic trait(s) of a given variety, the GM version shares an equivalent nutritional status to its conventional counterpart. Once this is demonstrated, the crop is said to be as safe as the conventional variety, and it may be marketed commercially. GM crops containing a pesticidal protein like Bt are subject to mandatory allergenicity testing by the EPA. But for all other GM traits, no premarket testing is required for genetically engineered foods; and safety is determined by manufacturer run field tests and voluntary consultations with the FDA (Bratspies, 2013; Powell, 2004; Schmidt, 2005).

In March of 2013, the Consolidated and Further Continuing Appropriations Act passed the United States Senate and was signed into law by President Obama. Hidden in the bill was an anonymously authored provision that would protect U.S. biotech companies from litigation in the

event that GMO seeds turn out to be dangerous. The bill, commonly referred to as the “Monsanto Protection Act”, remained in effect until its expiration at the end of the fiscal year on September 30, 2013 (McLendon, 2013).

Close ties between U.S. regulatory agencies and agribusiness corporations are well-documented; many key figures at the FDA in particular, have either held important positions at Monsanto or vice versa. In fact, the FDA’s current Food Safety Czar is a former Monsanto executive. This “revolving door” potentially undermines the effectiveness of the government’s ability to ensure food safety by presenting a conflict of interests among policy makers (Ferrara, 1998; Hauter, 2012; Mattera, 2004). In the absence of more stringent federal regulation of genetically engineered crops and foods, protecting public health and safety falls largely upon state and local agencies. State initiatives to label GMO foods have recently received much media attention; yet so far these initiatives have been largely defeated, as industry opposition is fierce. However, the potential for local land use regulation of GMOs may be more promising.

The Research

Research Question and Goals

This study explores the motivations related to the local regulation of agricultural biotechnology through a civic agriculture perspective. For the purpose of this study, the term ‘civic agriculture’ refers to a place-based approach to local problem solving that provides a voice to all participants of the food system by encouraging participation in local governance (The theoretical basis of this definition will be discussed in greater detail in Chapter 2.). The research seeks to answer the following question:

What are the motivational factors that lead community members to push for and adopt county-level bans on the propagation of genetically modified organisms?

The purpose of this inquiry is twofold: to provide information about what various citizen groups and local governments are doing to regulate genetically engineered agriculture within their communities through land use controls, and to achieve insight into the motivating factors that lead citizens of rural agrarian counties to pursue and enact local ordinances regulating biotechnology. Results of this study include a review of communities that have enacted land use policies regulating GMOs; as well as a qualitative analysis of the motivational factors that led two case study counties to both pursue and adopt local GMO regulations. It is my hope that this research will serve as a helpful resource for citizens, activists, and communities interested in creating or maintaining healthy and sustainable local farm and food systems by enacting similar anti-GMO land use controls. Furthermore, the research will contribute to the growing body of academic literature concerning food system planning, sustainable communities, and civic participation in land use policy.

Hypothesis

It is hypothesized that rural, agrarian county-level bans on the propagation of genetically modified organisms are primarily driven by concerns related to genetic drift and the cross-contamination of genetically altered materials. More specifically, actors are responding to the perceived environmental, social, and economic threats that cross-pollination poses to organic farmers and others that produce non-genetically engineered plants. From a civic agriculture perspective, community members are collectively acting to preserve the embedded local systems of food and agricultural production.

Case Study Counties

I've chosen to examine ordinances at the county level because, in most parts of the United States, the majority of agricultural activity occurs outside of the municipal limits. This

unit of analysis encompasses a wide range of municipalities and unincorporated places located throughout a given county; thus, it allows for the inclusion of a broader range of stakeholder interests. Additionally, a county is more likely to contain a variety of farm sizes: from small family farms to larger, incorporated operations. For all these reasons, I suspect that a county-level focus might lend itself to concerns over cross-contamination at a larger scale.

The decision was made to focus upon Mendocino County, California and Jackson County, Oregon for several reasons. While the counties differ in terms of population demographics and agricultural specializations, they are similar in many respects. Both are rural communities with longstanding histories of timber and agricultural production; both have strong local organic farming networks, and both are centers of winegrape production (albeit Jackson to a much lesser degree than Mendocino).

As the first jurisdiction in the United States to enact a local ban on the propagation of GMOs, Mendocino County's Measure H was a precedent-setting achievement. The measure's passage in 2004 garnered national and international attention; as a result, there exists a considerable amount of media coverage and a small body of scholarly research on the subject, from which I was fortunate to draw upon. At the outset of this study, Jackson County had not yet voted on its Measure 15-119. I followed the campaign closely over several months as I conducted my preliminary data collection and analysis. When the measure was approved in May, 2014 I was able to conduct interviews with key informants while the campaign was still very fresh in their minds. It is my hope that the juxtaposition of the earliest and most recent instances of local biotechnology regulations will make for an interesting and insightful case study analysis.

Methodology

An inductive research framework was utilized to select the two case study counties and formulate a hypothesis. In order to gain insight into the motivations of communities that have sought to regulate the propagation of genetically modified organisms, I began with a review of the relevant theory and literature concerning civic agriculture and alternative agrifood movements. This literature review informed my definition of the term civic agriculture and prepared a basis for the assertion that citizen-led initiatives to enact local GMO ordinances are manifestations of civic agriculture; thus providing a theoretical lens for approaching the qualitative analysis of the research.

This step was followed by an analysis of the municipal- and county-level GMO ordinances of nine American communities, which allowed for the selection of the case study communities. Next, I conducted an intensive analysis of the ordinances that were passed by the case studies of Mendocino and Jackson Counties. This step allowed for the preliminary gathering, recording, and organizing of relevant information that would comprise the qualitative analysis portion of the research. The qualitative analysis of the two case studies utilized primary and secondary sources, each of which are elaborated below.

Primary sources consist of structured telephone interviews with key actors involved in the passage of local GMO land use controls within each case study jurisdiction. Preliminary informants were identified through a review of secondary sources that included archived campaign materials and media coverage of the ordinances, accessed electronically via the World Wide Web. Informants were initially contacted by phone or email. A purposive snowball sampling approach was used to identify additional potential key informants. Early interviewees volunteered the names and sometimes the contact information of other stakeholders, who were

then contacted for interviews. In order to capture a wide range of perspectives on the local GMO ordinances, informants from both the supporting and opposing campaigns were contacted.

A total of thirteen structured telephone interviews were conducted with citizens, farmers, scientists, and campaign consultants representing both sides of the issue in each case study county. All were recorded for later transcription and analysis. The interviews lasted between 30 and 60 minutes on average and followed a structured interview guide consisting of eleven questions. Once all interviews had been transcribed, responses were coded and categorized using a constant comparative technique to group similar themes and ideas that emerged.

Secondary sources consist of letters to the editor, other media coverage, scholarly articles, campaign materials, and arguments included in the ballot statements. These materials were coded using the key themes that emerged from the analysis of the primary sources, and the same constant comparative methodology. A more detailed discussion of the emergent themes can be found in Chapter 5.

Thesis Chapters

Chapter 2 reviews the relevant theory and literature concerning civic agriculture and alternative agrifood movements. Chapter 3 presents an analysis of the local legislative efforts to ban GMOs in nine American communities. Chapter 4 presents a more detailed analysis of the ordinances that were passed by the case studies of Mendocino and Jackson Counties. Chapter 5 presents the research findings concerning the motivating factors behind the citizen-led initiatives of each of the two case study communities. Chapter 6 discusses the findings and conclusions of the research, describes the implications, and provides recommendations for future research.

CHAPTER 2. LITERATURE REVIEW

We have alternatives that protect the Earth, protect our farmers, and protect our health and nutrition. To occupy the food system means simultaneously resisting corporate control and building sustainable and just alternatives, from the seed to the table. One seed at a time, one farm at a time, one meal at a time — we must break out of corporate food dictatorship and create a vibrant and robust food democracy (Shiva, 2012, para. 12).

This chapter provides a review of the relevant theory and literature concerning agriculture and alternative agrifood movements. This literature review informed my definition of the term civic agriculture and supports the assertion that citizen-led initiatives to enact local-level GMO regulations are manifestations of civic agriculture. However, before discussing these concepts, it is first necessary to briefly explore the existing dominant agricultural paradigm to which they are responding.

The Industrial Agriculture Paradigm

The twentieth century brought a number of major shifts in the way that food is produced and consumed in the United States. Up until the mid-1940s, food systems were generally based upon local economies and many families grew much of their own food in home gardens. In the years following World War II, American agriculture began transitioning to a more industrialized mode of production. The term ‘industrial agriculture’ commonly refers to the large-scale, corporate-run, export-oriented production of monocultures. The existing dominant industrial agricultural paradigm is characterized by its embrace of the modern trends of mechanization, specialization, globalization, corporate consolidation, and commodity-focused policies. Today’s

farms are larger in scale; more reliant upon chemical and petroleum inputs; less diversified, in terms of agricultural production; and less dependent upon farm labor (Jackson, 2008; Paarlberg and Paarlberg, 2000; Berry, 1977). The industrial model of food production, along with changing patterns in food consumption, cheap transportation costs, and heavily subsidized infrastructure allows agricultural production to take place far from the most densely populated areas (Jackson, 2008). As a result, most food now travels an average of 5,000 miles from farm to plate (Weber & Matthews, 2008).

The dominant paradigm has been linked to the decline of rural communities, widespread environmental degradation, and a populace that is increasingly disconnected from the ecological and traditional social processes of agricultural production (Lyson, 2002; Hauter, 2012; Jackson, 2008; Pollan, 2006; Berry, 1977). Industrial agriculture's myopic focus upon production and efficiency fails to take into account the interests of small farmers and rural communities (Lyson, 2002). Technological advances such as the tractor and other mechanized methods of agricultural production have reduced the need for human farm labor; as a result, the populations of farming communities have declined dramatically (Kirschenmann, 2003; Carr & Kefalas, 2009). The consolidation of small and medium-sized farms into larger, more mechanized operations has further exacerbated the plight of many agricultural communities. Studies have found depressed median family incomes, high poverty rates, low educational attainment, and social and economic inequalities between ethnic groups are all associated with land and capital concentration in agriculture (USCOTA, 1989). Moreover, conventional farmers have become increasingly dependent upon costly inputs such as chemical fertilizers, seeds, pesticides, and growth promoting antibiotics for livestock (Gottlieb, 2002; Lyson, 2004).

Industrial agriculture contributes to environmental degradation through the pollution of waterways and the creation of dead zones in the oceans, loss of global biodiversity, the release of toxins in food chains, increased use of chemical pesticides and fertilizers, and a singular reliance upon fossil fuels which contributes to global warming in the form of carbon emissions (Horrigan et al., 2002; Tilman et al., 2002; Diaz and Rosenberg, 2008; Marks et al., 2010; Foley et al., 2011; Lynch et al., 2011; Heinberg, 2011; Rosset, 2006). Moreover, industrial agricultural methods exploit soils and aquifers at rates that far outpace the time that it takes for these resources to be replenished naturally (Lal, 2004; Tegtmeier and Duffy, 2005; Montgomery, 2007; Gordon et al., 2008). Currently, industrial agriculture accounts for 40% of global greenhouse gas emissions, 75% of global biodiversity losses, and consumes 70% of the world's water supply (Shiva, 2012).

The industrial agriculture paradigm is widely criticized for concentrating power in the hands of agribusiness corporations (Lyson, 2002; Hauter 2012; Jackson, 2008; Shiva, 2012). The widespread trend of vertical integration strategies within agriculture and the food system allows large conglomerates to control nearly every aspect of the industry: from inputs like seeds, fertilizer, and pesticides; to post-production stages such as processing, packaging, storage, and marketing (Gottlieb, 2001; Hendrickson & Heffernan, 2002). In fact, just twenty corporations produce the majority of food in the United States, and four major food chains control more than half of all grocery stores (Hauter, 2012).

While the industrial food system currently produces more than enough calories to feed the population, more than 17.2 million U.S. households are food insecure; that's a rate of approximately 1 in 7 (Welch & Graham, 1999; Coleman-Jensen, 2011). This paradox is primarily a problem of distribution rather than production (IAAKSTD, 2009; Rosset, 2006).

Additional human health impacts connected to industrial agriculture include rising rates of obesity, diabetes, heart disease, and various other conditions resulting from poor nutrition; all of which are associated with the consumption of processed foods and diets that are high in animal fats (Pollan, 2006; Nestle, 2003; Walker et al., 2005).

These negative social, environmental, and human health externalities are seldom reflected in the economic costs paid by agricultural producers or the market prices of food products (Walker et al., 2005). Some scholars contend that this externalization is rooted in the industrial agriculture paradigm's conception of nature as something to be dominated, and its proffered notion that humanity exists apart from natural systems (Allen, 2004). Fortunately, a number of alternative agricultural movements have emerged in response to the dominant paradigm. These include sustainable agriculture, organics, localization, urban and peri-urban agriculture, and various food democracy and food sovereignty initiatives, among others (Beus & Dunlap, 1990; Kremen et al., 2012; Allen, 2004; DeLind, 2006; Goldberger, 2011; Lovell, 2010; Colasanti et al., 2012; Chung, Kirkby, et al., 2005; Lyson 2005; Bagdonis & Hinrichs, 2009; Lyson & Guptill, 2004; Macias, 2008; Dahlberg, 2001; Shiva, 2012; Hassanein, 2003; Rossett, 2006). In contrast to the industrial agriculture model, alternative agrifood systems regard humanity as a part of nature and encourage cooperation with, rather than domination over, natural systems. Moreover, alternative agrifood systems often emphasize interdisciplinary research and holistic approaches to agricultural production (Allen, 2004). Many of these alternative paradigms are rooted in the concept of civic agriculture.

Civic Agriculture

Tom Lyson (2005) uses the term ‘civic agriculture’ to refer to the “embedding of local agricultural and food production in the community” (Lyson, 2005 p. 92). Lyson describes the inherently local nature of civic agriculture as an organized system of agricultural production comprised of networks of producers that are bound together by place. Lyson maintains that civic agriculture is fundamentally about community problem solving. Viewed through the lens of civic agriculture, local change occurs when engaged citizens work collectively to solve those problems faced by their community. While civic agricultural movements can vary in terms of structure and scale, they share in common a focus upon “local problem-solving activities organized around food and agriculture”, as well as a “shared responsibility for the common good that drives the civic community” (Lyson, 2004 p. 103). From a civic agriculture perspective, change is generated by social movements involving networks of local producers and consumers.

Lyson and Guptill (2004) draw distinctions between civic agriculture and the dominant industrial agricultural paradigm. While industrial agriculture calls for an increasingly global and corporate-controlled food system, civic agriculture is more intimately linked to local or regional markets that more directly connect producers and consumers. Industrial agriculture is characterized by larger farms and is driven by goals of productivity and efficiency. In contrast, civic agriculture is characterized by small- and medium-sized agricultural operations that are seeking alternative strategies to maintain economic viability. The authors contend that unlike the prescriptive approach of the industrial model, civic agriculture is sensitive to the social and demographic variables that are unique to a particular community. Lyson (2004) suggests that unlike the industrial agriculture paradigm, which is primarily oriented towards economic

globalization and corporatization; a civic agriculture approach focuses upon establishing, maintaining, and strengthening local economic systems.

Civic agriculture, as originally defined by Lyson, focuses primarily upon agricultural producers and food processors; however, in recent years the term has been expanded to include virtually all stakeholders in the food system. DeLind (2002) describes civic agriculture as a legitimizing force in the development of alternatives to the dominant industrial agriculture paradigm. She explains that as a conceptual tool, the term has the power to focus public attention on critical issues within the agricultural system. Moreover, she contends that the inherently local, grassroots nature of civic agriculture allows for the shift from a strictly prescriptive focus on production and economic efficiency to one that embodies the ecological and socioeconomic issues that are uniquely relevant to a particular community.

However, DeLind expresses concern over civic agriculture's keen focus upon creating economic infrastructure and market interactions. She argues that this approach places the burden of righting agricultural wrongs in the hands of producers, and fails to adequately address the need for collective public action on the part of consumers. While DeLind acknowledges that agricultural production is a key component of civic agriculture; she contends that a broader definition of civic agriculture is needed. Such a definition would encompass the economic, social, and political considerations of a community and provide a more effective vehicle for promoting citizenship and environmentalism.

Along the same lines, Hinrichs and Barham (2007) contend that the key to transformative agricultural change is a comprehensive, integrated framework that incorporates various disciplines and sectors and encourages the participation of a broad range of stakeholders. Chung et al. (2005) expand upon the notion of civic agriculture as a mechanism for public change by

exploring the concept of public space as it relates to public work and the creation of a more participatory agriculture. The authors contrast two case studies; a publicly funded, nonprofit community garden, and a for-profit privately owned orchard enterprise. Their findings suggest that civic agriculture is a flexible concept that can thrive in a variety of different types of spaces, and that location and profit status of an agricultural endeavor matters little, provided that a culture of collective engagement is present.

Agrifood System Alternatives

Civic agriculture's emphasis upon place-based solutions to agricultural issues lends itself well to the discourse on local food systems and the broader set of "agrifood system alternatives" which aim to counteract the disempowering, often destructive forces of the dominant industrial agriculture paradigm (Allen, 2004). Allen argues that while researchers and activists have recently expanded the scope of sustainable agriculture initiatives to include related social issues, the discourse is still primarily dominated by the natural sciences, which she contends takes an abstract and overly reductionist approach to social elements of agriculture.

Allen echoes DeLind's concern that while many alternative local movements have begun to embrace a more socio-ecological framework, the central focus upon farmers as the primary component of the agrifood system fails to acknowledge the need for broader social and political change. Allen contends that the success of civic agriculture and alternative agrifood movements depends upon their ability negotiate and consult with existing institutions and organizations that are embedded in the dominant structure (Allen, 2004). To this end, she suggests an approach that combines top-down, policy changes with bottom-up, grassroots changes in consumer behavior and local food systems initiatives. Like Lyson and others, Allen emphasizes the importance of

“articulating a unified vision” that embodies local agriculture and encourages broad civic participation within such efforts (Allen, 2004 p.210-211).

Dahlberg (2001) argues the need for a re-conceptualization of the industrial and economic ideologies that support and encourage the dominant industrial agriculture paradigm. He suggests that the reforms needed to re-establish democratic responsibility in society and those needed to democratize the food system are parallel and reinforcing. He calls for an exploration of the linkages and potential synergies between the two realms in order to develop new values, images, metaphors and cosmologies that increase the diversity of ecosystems, physical structures, cultures, and institutions and recognize them as sub-systems of a larger natural/social/built environment.

Hassanein (2003) proposes a participatory approach to addressing the problems inherent to the current agrifood system through collective participation in ‘food democracy’, which she defines as “citizens having the power to determine agro-food policies and practices locally, regionally, nationally, and globally” (Hassanein, 2003 p.70). Food democracy is a means of exposing and challenging the anti-democratic forces that currently control the industrial food system, and broadening participation and understanding in alternative agrifood systems. Food democracy allows participants to step outside the confining roles of “consumer”, “producer”, or “worker” and creates new spaces for interaction and knowledge sharing between diverse social groups.

Rosset (2006) writes of the ‘food sovereignty’ paradigm that has recently emerged from the larger conversation of food democracy. Food sovereignty stands in marked contrast to the prescriptive, neoliberal forces that seek to undermine food security through the systematic deregulation of international agricultural markets. Food sovereignty is embodied by the work of

La Via Campesina, the global peasant movement, which seeks to restructure food production and consumption at the local, national, and international levels in a way that is supportive to the needs of the peasant and family farm sectors. La Via Campesina challenges the dominant industrial agrifood system with an approach that is rooted in agroecological principles, local cultural practices, and traditional agrarian systems of knowledge.

Conclusion

This review of the theory and literature surrounding civic agriculture and agrifood system alternatives sheds some insight into the various food and agricultural movements that have emerged in opposition to the dominant industrial agricultural forces that characterize the current regime. A primary theme among these movements is the stated need to reevaluate the industrial agriculture paradigm at the local, institutional, and larger structural levels through collective citizen participation. As a group, these various movements are bound together by their mutual focus upon place-based solutions that address issues of local importance through a process of community engagement, and (at least in part) a bottom-up, grassroots approach to change. Each movement provides a participatory framework for facilitating local problem solving by calling attention to the issues inherent in the dominant paradigm, educating the public, inviting citizens to reconnect with the food system, and fostering economic opportunities for agricultural producers.

The theories of sustainable agriculture, food democracy, and food sovereignty can all be linked to the discussion of civic agriculture and agrifood system alternatives. Of course, these are not the only bodies of thought that may apply; additional theories might include community development theory, localism, politics of place, economic sociology, sustainable economics, and

social network theory, among many others. However, the concepts discussed in this chapter can be seen to encompass civic agriculture's primary themes of community tied to place, sustainable agriculture, collective community problem solving, preserving locally embedded agricultural production, and supporting embedded social networks. The emphasis on locally embedded agricultural production and social networks underscores the imperative that civic agriculture initiatives consider not just the economic aspects, but also the political, environmental, ethical, sociocultural elements of the food system.

While the civic agriculture paradigm is predicated on local agriculture, it is flexible enough to be applied and adapted at various scales (ie. municipal, county, regional, and state levels) in both public and private settings, and it lends itself well to multi-disciplinary approaches to transforming the food system. The inherent elasticity of the term accommodates the many variations of the concept of civic agriculture evinced by the related theory and literature. My thesis research therefore places the citizen-led initiatives to regulate GMOs in rural agrarian counties within the framework of civic agriculture, which for the purpose of this study is conceptualized as a place-based approach to local problem solving that provides a voice to all participants of the food system by encouraging participation in local governance.

CHAPTER 3. LOCAL LEGISLATIVE EFFORTS

Our victory in Mendocino County is simply the catalyst for counties all over the nation to protect their agriculture, food system and local economy. No amount of money can replace the love and commitment of people who care passionately about the place they live. This is a turning point in the corporate domination of the food system and a reclaiming of responsibility for agriculture at a local level (Doug Mosel, GMO Free Mendocino campaign coordinator, qtd. In Hedges, 2004, para. 2).

From the perspective of civic agriculture, the local regulation of agricultural biotechnology represents an effort to preserve agricultural systems and markets that are unique to a given community. Presently, nine districts throughout the United States have enacted land use legislation banning genetically modified organisms, and least 19 other districts have enacted ordinances restricting the use of GMOs (Organic Consumers Association, 2013). Many more towns and cities throughout the country have passed non-binding resolutions and declarations concerning biotechnology, and several states have passed legislation regulating specific species or varieties of genetically engineered plants and animals.

While the European Union has been a ‘GMO-free zone’ since 1998, the first American anti-GMO ordinance was not enacted until 2004. This landmark legislation created a “ripple effect” manifested by the subsequent adoption of similar ordinances in three separate jurisdictions that same year, as well as another five ordinances enacted over the next decade (Pechlaner, 2012). What caused this sudden surge of local GMO bans? Chapter 1 provided a broad overview of the potential benefits and risks posed by genetic modification, but to answer this question it is necessary to turn to the small body of scholarly articles that have explored the subnational regulation of GMOs. Powell (2004) emphasizes global consumer resistance to GE

technology as the impetus for these measures, and contends that local anti-GMO bans emerge in direct response to the “lack of sufficient federal regulation of genetically engineered crops and foods” (Powell, 2004 p.4).

Pechlaner (2012), Walsh-Dilley (2009), and Meyer (2007) present similar explanations in their analyses. Pechlaner argues that the burgeoning local anti-GMO movements are “emerging in direct opposition to the national pro-biotechnology development drive” (Pechlaner, 2012 p. 445), and suggests that local GMO regulations have the potential to “trickle up” to influence the pro-biotechnology paradigm that exists at higher-levels of state and federal government. Walsh-Dilley cites public distrust for the federal government’s ability to regulate the safety of GMO foods as well as “doubt over the biotechnology industry’s ability to make decisions in the interest of the general public” as contributing factors to local efforts to regulate GMOs (Walsh-Dilley, 2009 p. 99).

Meyer suggests that the wave of local GMO bans beginning in 2004 was largely influenced by concerns over the safety of GE technology expressed by members of the scientific community. I would like to expand upon these proposed explanations by adding that the public persecution of several scientific researchers who brazenly spoke out in opposition to biotechnology, both on the part of the industry itself as well as several prominent academic institutions largely funded by the biotech industry, was likely another contributing factor. Also, increasing public attention focused on the alleged seed patent infringement lawsuits involving farmers like Percy Schmeiser were likely at least partially responsible for the uptick in local biotechnology legislation.

This analysis focuses upon jurisdictions that have passed binding ordinances banning the propagation of genetically modified organisms within their respective political boundaries. These

jurisdictions are listed in chronological order, based on date of ordinance adoption. The analysis is constructed based on a review of more than 60 documents, including the texts of the ordinances, newspapers and other media coverage, press releases from community action groups, and scholarly articles. The review provides a summary of each ordinance, including statements of purpose and findings; a brief description of the agricultural production within the jurisdiction; and a description of the arguments in support and opposition to the ordinance. See Table 1 for an overview of the jurisdictions and ordinances included in this chapter.

Table 1. Municipal- and County-level GMO Ordinances

Title of Ordinance	Location	Date of Adoption	Purpose/Findings	Object of Regulation	Actors Regulated	Consequences, Penalties, Restitution
Prohibition of the Propagation, Cultivation, and Growing of Genetically Modified Organisms in Mendocino County (Measure H, codified in Chapter 10A.15 of Mendocino County Code)	Mendocino County, CA	March 2, 2004	To protect agricultural industry, natural environment, the private property rights of citizens, and the health and safety of people	Prohibits the propagation, cultivation, raising, or growing of GMOs within the County	Any person, firm, or corporation in violation of the ordinance	Confiscation and destruction of any organisms that are found to be in violation; and monetary penalties
Trinity Genetically Engineered Organisms Ordinance [Ord. No. 1284 § 1, 2004]	Trinity County, CA	August 3, 2004	To protect agricultural industry, natural environment, the private property rights of citizens, and the health and safety of people	Prohibits the propagation, cultivation, raising, or growing of GMOs within the County	Any individual, partnership, corporation, or organization in violation of the ordinance	Confiscation of any organisms that are found to be in violation; misdemeanor charges; civil liability for damages; costs of administration and abatement
Prohibition of Growing of Genetically Modified Organisms (Unnumbered ordinance, codified in Chapter 6.92 of Marin County Code)	MarinC, CA	November 2, 2004	To protect agricultural industry, natural environment, the private property rights of citizens, and the health and safety of people	Prohibits the propagation, cultivation, raising, or growing of GMOs within the County	Any individual, partnership, corporation, or organization in violation of the ordinance	Confiscation, destruction or quarantine of any organisms that are found to be in violation; costs of administration and abatement

Table 1. Municipal- and County-level GMO Ordinances continued

Title of Ordinance	Location	Date of Adoption	Purpose/Findings	Object of Regulation	Actors Regulated	Consequences, Penalties, Restitution
City of Arcata Genetically Engineered Organisms Ordinance (Ord. 1350, codified as Chapter 10.5 of Arcata Municipal Code)	Arcata, CA	Effective December 17, 2004	To protect agricultural industry, natural environment, the private property rights of citizens, and the health and safety of people	Prohibits the sale, distribution, propagation, cultivation, raising or growing of GMO seeds or crops within the City	Any individual, partnership, corporation, or organization in violation of the ordinance	Civil infraction for the first offense, misdemeanor charges for any additional offense in the same year; costs of administration and abatement
Genetically Modified Organisms Ordinance [Ord. 193 § 1, 2005]	Point Arena, CA	May 24, 2005	To uphold the public health, safety and welfare of the citizens and to prevent agricultural and environmental contamination from transgenic, GMOs	Prohibits the sale, distribution, propagation, cultivation, raising or growing of GMO seeds, whole plants, or crops	Any person, partnership, corporation, firm or organization in violation of the ordinance	Civil infraction for the first offense, misdemeanor charges for any additional offense in the same year; costs of administration and abatement
Town of Montville Genetically Modified Organisms Ordinance [Unnumbered ordinance]	Montville, ME	March 27, 2006	To ensure the right of residents to equitable access to life-giving seed; to protect native plants and trees from cross-contamination by GM plants and to protect garden varieties bred using traditional plant propagation methods from GE or GM organisms; to protect the health of inhabitants by ensuring they are confident of the integrity of the plants they grow and eat; and to defend the economy of the farmers, gardeners, and foresters	Prohibits the production of GMOs within the Town	Any person, partnership, corporation, firm or organization in violation of the ordinance	The Code Enforcement Officer is shall exercise such powers as are legal and necessary to carry out and effectuate the ordinance

Table 1. Municipal- and County-level GMO Ordinances continued

Title of Ordinance	Location	Date of Adoption	Purpose/Findings	Object of Regulation	Actors Regulated	Consequences, Penalties, Restitution
Santa Cruz Genetically Engineered Crop Moratorium [Ord. 4830 § 1, 2006]	Santa Cruz County, CA	June 20, 2006	To ensure public health and environmental safety, to preserve farmer or gardener choice in purchasing non-GMO seeds and plants, and to prevent genetically engineered contamination of nongenetically engineered crops, plants, insects, domesticated animals, wildlife and wildlands	Prohibits the propagation, cultivation, raising, or growing of GMOs within the County	Any individual, firm, partnership, trust, corporation, company, estate, public or private institution, association, organization or group in violation of the ordinance	Removal of genetically engineered organisms and restoration and clean up of the environment; fines of not more than \$1,000; and/or imprisonment in the County jail of the County of a term not exceeding six months, costs of administration and abatement
Ordinance Prohibiting Growing Genetically Modified Organisms in San Juan County (Initiative Measure No. 2012-4, codified as Chapter 8.26 of San Juan County Code)	San Juan County, WA	November 27, 2012	To protect agricultural industry, natural environment, the private property rights of citizens, and the health, safety and welfare of people	Prohibits the propagation, cultivation, raising, or growing of GMOs within the County	Any person or entity in violation of the ordinance	Confiscation, destruction or quarantine; costs of any applicable enforcement actions including nuisance abatement orders and penalties
The Genetically Modified Food Ordinance (Ballot Measure 15-119, codified as Chapter 635 of Jackson County Code)	Jackson County, OR	Ballot Measure received and filed on August 8, 2012	To protect the health, safety, and welfare of citizens; and to protect the economic security and commercial value of agricultural enterprises whose products stand to be damaged or diminished in value due to genetic contamination by GMO crops	Prohibits the propagation, cultivation, raising or growing of genetically engineered plants within the County	Any individual, partnership, corporation, or organization in violation of the ordinance	Confiscation or destruction of organisms; applicable nuisance enforcement actions and penalties

Like so many movements, it began in California...

California is estimated to be the fifth largest economy in the world; with an extremely diversified and productive agricultural sector comprised of 350 commodities (Heath, 2004; California Department of Food and Agriculture, 2013). California is the leading state in cash farm receipts, representing 11% of the US total. Over one-third of the country's vegetables and nearly two-thirds of the country's fruits and nuts are produced in California (California Department of Food and Agriculture, 2013). When the first GMO ordinance was enacted in 2004, less than 1% of crop agriculture in California was genetically modified (Heath, 2004). California is also the top state for organic agriculture and is known for its uniquely progressive legislation (Pechlaner, 2012). The California Constitution includes a citizen's initiative mechanism that empowers local communities to pass ordinances within their limits, provided that they are not in conflict with state law (Powell, 2004). To date, four counties and two municipalities in California have enacted local ordinances regulating biotechnology. Several more counties within the state have attempted to pass similar ordinances, without success (Organic Consumers Association, 2013). Table 2 lists the California county anti-GMO ballot initiatives that failed.

Table 2. California Counties that Failed to Pass Local GMO Ordinances

County	Percent Voted:		Year
	Yes	No	
Butte	39%	61%	2004
Humboldt	35%	65%	2004
San Luis Obispo	41%	58%	2004
Sonoma	44%	56%	2005

Data from the Organic Consumers Association (2013).

Mendocino County, California

In March 2004, Mendocino County, California became the first jurisdiction in the United States to pass a local ordinance banning the propagation of genetically modified organisms. The ordinance, Measure H, is officially titled “Prohibition of the Propagation, Cultivation, and Growing of Genetically Modified Organisms in Mendocino County”. As this name implies, the ordinance effectively makes it unlawful to propagate, cultivate, raise, or grow GMOs within the County (Prohibition of the Propagation, Cultivation, and Growing of Genetically Modified Organisms in Mendocino County ordinance [2004]). Measure H does not regulate genetically modified bacteria or byproducts; nor does it regulate the sale or labeling of GM food and livestock feed within the County. The ordinance is the result of an intense campaign waged in the rural winegrowing community, throughout which more money was spent than on any single ballot measure in the history of the County. Mendocino County’s Measure H will be discussed in greater detail in Chapter 4 of this thesis as one of two county case studies.

Trinity County, California

In August 2004, the Trinity County, California Board of Supervisors approved a county-wide ban on genetically engineered crops and animals by a vote of 3-1 (Elias, 2004). The Community Environmental Legal Defense Fund of Pennsylvania (CELDF), a non-profit public interest law firm, provided legal assistance and helped to draft the “Trinity County Genetically Engineered Organisms” ordinance (Vogel, 2004). The ordinance establishes that the propagation, cultivation, raising, and growing of genetically engineered organisms is unlawful, and that any such activities constitute a public nuisance. The ordinance enumerates the following findings:

It is necessary, in the County, to protect our agricultural industry, our natural environment, the private property rights of our citizens, and the health and safety of our people by restricting the introduction into our County of genetically engineered crops, livestock and other organisms. Genetically engineered life forms and products are being developed with precipitous speed, and have been introduced into the marketplace before the potential risks and long-term effects of

these products have been studied. Many companies and foreign markets do not accept genetically engineered food products, so the danger of contaminating and thereby reducing the value of neighboring crops by genetically engineered crops creates a serious economic threat to farmers and ranchers. The impact on our natural environment from genetically engineered organisms and contamination from such is unpredictable, ultimately uncontrollable, and has received little study (Trinity County Genetically Engineered Organisms Ordinance [Ord. No. 1284, § 1, 8-3-04]).

The ordinance does not regulate the sale of foods containing GMO ingredients. The ordinance designates the County Agricultural Commissioner as the authority to enforce the provisions of the measure, subject to the existing County nuisance abatement penalties and procedures. The ordinance establishes that persons in violation of the ordinance shall be civilly liable for damages up to \$5,000 per day.

Located in rural northern California and sharing a border with Mendocino County to the south, Trinity County has a population of 13,776 according to the most recent decennial census (U.S. Census, 2010). While the ordinance makes it a misdemeanor to grow or raise genetically engineered plants and animals, it is considered a largely symbolic gesture, since 95% of the county is federal land and does not fall under the jurisdiction of the ordinance (Meadows, 2004). Furthermore, the county ranked 51 of 58 counties in terms of agricultural output in 2002; with timber accounting for nearly all the agricultural revenue in the county (Trinity County Farm Bureau, 2012).

The ordinance is the result of citizen-led efforts to lobby the Trinity County Board of Supervisors (Pechlaner, 2011). Supporters of the ordinance voiced concern over the potential impact of cross-contamination upon the county's small non-GMO farming industry; as well as fears that genetically engineered salmon might one day breed with the conventional steelheads in the Trinity River. The ordinance was supported by a broad spectrum of Trinity residents, which included: farmers, business owners, home gardeners, nurseries, social workers, students, clergy, teachers, government employees, and investment, computer, and health professionals. One local

farmer and ban proponent was quoted as saying, "Today's vote follows 25 years of tradition in Trinity County, regarding the passage of common-sense ordinances that protect the wellbeing of local citizens." (Organic Consumers Association/Bio Democracy, 2004). Opposition came primarily from the Biotechnology Industry Organization, a Washington, D.C.-based trade group, which argued that local measure was confusing and counter to federal regulations (Elias, 2004).

Marin County, California

In November 2004, residents of Marin County, California voted to approve Measure B, a local ballot initiative banning the propagation of GMOs. The initiative was passed into law with a 61% vote of support (Heath, 2004). The resulting ordinance, titled the "Prohibition of Growing of Genetically Modified Organisms", proclaims that "It is unlawful for any person or entity to propagate, cultivate, raise, or grow genetically modified organisms in Marin County, and any act in violation of this provision is declared to constitute a public nuisance" (Prohibition of Growing of Genetically Modified Organisms ordinance, [2004]). The text of the ordinance closely resembles that of the Trinity County Genetically Engineered Organisms ordinance.

The stated purpose of the ordinance is to protect agricultural industry, natural environment, the private property rights of citizens, and the health, safety and welfare of residents. The ordinance cites several findings as the basis for its passage. These findings include the speed at which genetically modified life forms and products are developed and the lack of available knowledge of the potential risks and long-term health and environmental effects of GMOs, the risks of cross-pollination of neighboring crops by genetically engineered organisms which might reduce the value of non-GMO agricultural products, and elements of the 2004 Marin Countywide plan supporting sustainable agriculture.

The ordinance grants the Marin County Agricultural Commissioner the authority to enforce the ordinance, subject to the existing county nuisance abatement penalties and procedures. The ordinance does not restrict the production of GMOs for medical use or research, provided that they are physically contained within a laboratory setting; nor does it restrict the sale of products containing GMOs. The ordinance does not levy a fine for violation of the provision; however it does establish that the violator bear the cost of its enforcement (Prohibition of Growing of Genetically Modified Organisms ordinance, [2004]).

Marin County is a coastal community located immediately north of the San Francisco Bay, and the county is known for its dairy and organic farming (Powell, 2004). According to the most recent decennial census, Marin County's population is 252,409 (U.S. Census, 2010). Agriculture contributes over \$80 million annually to Marin County's economy, and the primary agricultural industries are dairy and livestock (Marin County Farm Bureau, 2012). At the time of the ordinance's passage, no genetically modified crops were being produced in Marin. As indicated by the ordinance's text, one impetus for the measure was to protect against future propagation of genetically engineered plants that might jeopardize local agriculture through cross-contamination.

Support for Measure B was primarily generated by GMO-Free Marin, whose members collected over 13,000 signatures in order to qualify the initiative for placement on the November 2004 ballot (Powell, 2004). GMO-Free Marin was a grassroots organization endorsed by a number of residents, community leaders, local businesses, and community organizations (GMO-Free Marin 2004). Prominent supporters included Marin County's U.S. Representative Lynn Woolsey, the Marin County Board of Supervisors, the Sierra Club, and numerous local farmers and ranchers (Heath, 2004). Opposition to the ordinance included representatives of numerous

biotechnology and pharmaceutical corporations, and the president of the Marin County Farm Bureau. Those opposing the ordinance presented the following arguments: the ban contradicts scientific data supporting the safety of biotechnology; biotechnology can reduce dependence on chemical pesticides; the ban contradicts the county's stated support of sustainable, technology-based industries, and the ban could potentially deny citizens future innovations in healthcare or agriculture (League of Women Voters of California Education Fund, 2004).

City of Arcata, California

In November 2004, the city of Arcata, California became the first municipality in the United States to pass a binding ordinance banning the propagation of genetically modified organisms. The ordinance titled "City of Arcata Genetically Engineered Organisms Ordinance" was approved by the City Council by a unanimous vote (Horner, 2004). The ordinance establishes that "The propagation, cultivation, raising, and growing of genetically engineered crops in the City of Arcata constitutes a public nuisance, and shall not be deemed legitimate agricultural operations." (City of Arcata Genetically Engineered Organisms Ordinance [2004]). The ordinance is based on the Trinity County Genetically Engineered Organisms ordinance; and like Trinity County, Arcata received assistance from CELDF in drafting the ordinance (Vogel, 2004). As a result, the text of the Arcata ordinance bears marked similarities to the Trinity County ordinance, as well as the Marin County ordinance.

The Purpose and Findings section of the ordinance are nearly identical to those of the Trinity Ordinance, but for two additional items: the City of Arcata ordinance mentions the potential for the development of pesticide and herbicide resistance posed by GMO crops, and states that it is impossible for farmers of genetically engineered seeds to control pollen from GMO crops and prevent contamination; the ordinance does not restrict the sale of foods

containing GMO ingredients, and exempts medical and agricultural research uses, provided that they are physically contained within a laboratory setting. The ordinance authorizes the Director of Environmental Services to administer the measure in accordance with the existing nuisance procedures (City of Arcata Genetically Engineered Organisms Ordinance [2004]).

Arcata is a coastal community, located 275 miles north of San Francisco; with a population of about 17,231 people (U.S. Census, 2010). Arcata is home to both redwood forests and Humboldt State University. The city maintains 2,300 acres of community forest which is often used to demonstrate sustainable forestry management techniques (Compton, 2013). While logging and marijuana cultivation are the two primary natural resource industries, Arcata's General Plan features policies to encourage agricultural production within the city (City of Arcata General Plan, 2000). The City is widely heralded for its progressive environmental planning practices (Compton, 2013).

The ordinance appears to have been widely supported by residents, although little information could be found regarding the backgrounds and positions of the individuals that were in support of the ban. At the first City Council meeting that the ban was discussed, the city's Open Space-Agriculture Committee recommended that the issue remain open for public comment before the council made a decision, but no one came forward in opposition. Arcata City Councilman Dave Meserve, who worked on the draft ordinance with City Attorney Nancy Diamond, expressed hopes that the ordinance would serve as a model for other municipalities looking to regulate the propagation of GMOs. Milton Boyd, chairman of HSU's Biological Sciences Department, expressed concern that a ban against GMOs might thwart important medical advances. The executive director of the Humboldt County Farm Bureau explained that

the Bureau chose to remain neutral because some of its members grow GMOs, and some do not (Horner, 2004).

City of Point Arena, California

In May 2005, the city of Point Arena, California passed its own local ordinance banning the propagation of GMOs, and became the second municipality in the United States to do so. The City's "Genetically Modified Organisms Ordinance" establishes that "The propagation, cultivation, raising, and growing of genetically engineered crops in the city of Point Arena constitutes a public nuisance, and shall not be deemed legitimate agricultural operations" (Genetically Modified Organisms Ordinance [Ord. 193 § 1, 2005.]). The text of the ordinance is nearly identical to that of the City of Arcata Genetically Engineered Organisms Ordinance. The only notable difference is that the City of Point Arena ordinance designates the City Council with the authority to administer the measure.

The City of Point Arena is a small coastal community with a population of 449 people and is located within Mendocino County (U.S. Census, 2010). As previously noted, Mendocino County passed its own ban on the propagation of GMOs in 2004. However, as a city, Point Arena was exempt from the county initiative. While the City's dominant industry is tourism, the Point Arena local landscape includes a number of working farmlands (Point Arena Community Action Plan [2010]). In a press release, Point Arena Mayor Leslie Dahlhoff cited concerns of cross contamination by genetically modified crops as the impetus for the ordinance, and explained: "I am pleased the City Council of Point Arena recognizes the need to be cautious with this technology." ("City of Point Arena Passes Ordinance.", 2005).

Then it Went “Bi-coastal”...

Town of Montville, Maine

The Town of Montville, Maine was the first jurisdiction outside of the state of California to pass legislation banning the propagation of genetically modified organisms. In 2008, the community enacted the “Town of Montville Genetically Modified Organisms Ordinance”. The purpose statement of the ordinance begins as follows:

The purpose of this ordinance is to ensure the right of Montville’s residents to equitable access to life-giving seed; to protect Montville’s native plants and trees from cross-contamination by genetically modified plants and to protect garden varieties bred using traditional plant propagation methods from genetically engineered or genetically modified organisms; to protect the health of Montville’s inhabitants by ensuring they are confident of the integrity of the plants they grow and eat; and to defend the economy of the farmers, gardeners, and foresters in the Town of Montville... (Town of Montville Genetically Modified Organisms Ordinance [2008]).

The ordinance text cites the United States Constitution, along with several articles and statutes of the State of Maine Constitution as the authoritative instruments for enacting the measure. Of particular interest are two sections of Maine Statute Title 7. Section 1-A, which proclaims agriculture as a major industry of the state; contributing to the state’s overall economy and the maintenance and strengthening of rural life and values. This section also identifies the survival of the family farm as being of special concern of the people of the state. Section 1-B reiterates the importance of agriculture to the state’s economy and proclaims the preservation of rural life and values in the state to be of public interest (Town of Montville Genetically Modified Organisms Ordinance [2008]).

The ordinance contains a set of six findings related to genetically engineered organisms, several of which closely resemble the findings included in ordinances enacted in California. The first finding concerns the speed at which genetically engineered organisms and products are being developed, and the dearth of long-term studies on the impacts of the products on human

and non-human organisms. The second finding addresses the unpredictability and uncontrollability of the impact of GMOs on the natural environment. It describes the potential for cross-pollination and the risk of “destroying local ecosystems and potentially irreparably and dramatically altering biodiversity” (Town of Montville Genetically Modified Organisms Ordinance [2008]). The third finding concerns the potential for accelerated development of resistant pest populations. The fourth finding asserts that cross-contamination of genetically engineered organisms cannot be prevented by GMO farmers. The fifth finding mentions the potential economic risks that cross-contamination poses to organic producers. The sixth and final finding addresses the potential effects upon non-commercial gardens including residential, community, and school gardens. These are identified as human health and food quality concerns.

The ordinance establishes that it is unlawful to produce any genetically engineered organisms within the town of Montville for a period of ten years. The “sunset” clause of the ordinance establishes that any time previous to the expiration of the ordinance, or within 30 days of that time, the issue of extending its expiration date may be considered and put to a majority vote. Finally, the ordinance assigns the Montville Code Enforcement Officer the authority to enforce the ordinance and exercise “such powers as are legal and necessary to carry out and effectuate its purpose”. Administration of the ordinance is the responsibility of the Select Board of Montville. Growers that are in violation of the ordinance may appeal to the Board of Appeals. (Town of Montville Genetically Modified Organisms Ordinance [2008]).

Montville is a rural community with a population of approximately 1,032 residents (U.S. Census, 2010). According to the town clerk, the Town has fewer than ten commercial farms, and as of 2008, only one farmer grew genetically modified crops. In the years leading up to the passage of the ordinance, the neighboring communities of Liberty, Lincoln, and Brooklin all

passed non-binding resolutions to be GMO-free zones. Newspaper reports indicate that public support for the local regulation of GMOs in Montville was led by resident commercial organic farmers, greenhouse business owners, and organic gardeners. Support for the grassroots movement was galvanized after a public screening of the documentary “The Future of Food” was held at the Montville Community Hall. A local organic farmer in attendance expressed a desire to protect the identity of native and organic seed stock. He explained, “Things that belong to everybody seem to have been taken away by a few people in power, and we can’t have that” (Turkel, 2008).

Opposition to the ordinance came from the Maine Biotechnology Information Bureau, supported in part by major biotechnology corporations including Monsanto and DuPont. In a press release, the Bureau argued that by halting biotechnology research and development efforts the ban might have a detrimental effect upon the state’s economy. The executive director of the Bureau, Doug Johnson explained in a blog entry, “This isn’t a fight over what may or may not be grown in Montville, it’s a battle over the public’s acceptance of science in shaping the future of agriculture” (Johnson, 2008). Ned Porter, deputy commissioner of the Maine Department of Agriculture expressed concern that the Montville ordinance contradicts the State’s goal to accommodate and support a wide variety of agricultural production methods. He explained, “We’re a big state with a lot of different markets. Farmers should be able to choose what they want to do. We ought to be able to accommodate all that” (Turkel, 2008).

After the ordinance was passed, the Maine Department of Agriculture queried the State’s attorney regarding its validity in lieu of Maine’s Right to Farm legislation (Turkel, 2008). The ordinance is upheld by provisions of Title 30-A of the Maine Revised Statutes, which recognizes the authority of Maine municipalities to adopt any ordinance or bylaw on any subject not

expressly prohibited by state legislature, and which establishes a presumption that all ordinances are valid as adopted pursuant to a municipality's inherent home rule authority (Article VIII, Part Second., Municipal Home Rule, 1871). Historically, Maine courts have been reluctant to find municipal ordinances preempted by state law (Bussell, 2009).

Months after the passage of the Montville Ordinance, Maine repealed its Right to Farm legislation (Maine Right to Farm Enabling Statute, 2007 (repealed 2008)). In 2010, the State passed legislation establishing agricultural management practices specific to genetically engineered crops and providing protection to farmers against lawsuits by corporate seed makers concerning the unintended presence of engineered plant material in non-GE farming operations (An Act To Ensure the Integrity of Organic Agricultural Crops [2008]). In January 2014, the governor of Maine signed a bill that requires the labeling of all foods containing GMOs (Mistler, 2014). This bill, along with a similar bill passed in Connecticut in 2013, contains a trigger clause that requires other states to pass GMO labeling laws before the legislation can be enacted. In April 2014, the Vermont Senate passed a bill that would make it the first U.S. state to enact mandatory labeling of foods made with genetically modified organisms. Immediately after passing the bill, a group of four industry organizations including the Grocery Manufacturers Association; the Snack Food Association; the International Dairy Association; and the National Association of Manufacturers filed suit against the State of Vermont. The plaintiffs allege that the bill imposes burdensome new speech requirements and restrictions that are in violation of the First Amendment. The bill is scheduled to take effect July 1, 2016 (Remsen, 2014).

Santa Cruz County, California

In June 2006, Santa Cruz County, California became the fourth county in the nation to ban the propagation of GMOs. The Santa Cruz County Board of Supervisors voted unanimously

to adopt a precautionary moratorium on growing genetically engineered crops based on the recommendations of the GE Subcommittee of the Santa Cruz Public Health Commission's report. The report was the result of a 10-month long investigation conducted to assess the health, environmental, economic and social risks associated with the growing of GE crops in the county (Organic Consumers Association, 2006). The ordinance establishes that "It is unlawful for any person to propagate, cultivate, raise, or grow any genetically engineered crop. Any act in violation of this prohibition is declared to constitute a public nuisance." (Santa Cruz Genetically Engineered Crop Moratorium [Ord. 4830 § 1, 2006]).

The text of the ordinance closely resembles that of the Trinity County, Marin County, Arcata, and Point Arena ordinances. However, the Santa Cruz County ordinance does not contain a 'Purpose' section. Moreover, while the first finding is the same as the first finding in each of the afore-mentioned counties, the subsequent four findings are unique to the Santa Cruz Ordinance, and include the following:

Health testing of the effects of exposure to genetically engineered organisms in food is not required by any government agency. The lack of comprehensive safety testing leaves a potentially dangerous scientific void in the knowledge available about the short- and long-term health effects of genetically engineered foods.

Farmers and gardeners who choose not to grow genetically engineered crops currently have no clear legal recourse if their non-genetically engineered crops are contaminated by genetically engineered pollen or seeds.

There is currently no legal requirement to label genetically engineered seeds or rootstock, thus limiting farmers' or gardeners' choices.

Currently, adequate safeguards do not exist to prevent genetically engineered contamination of nongenetically engineered crops, plants, insects, domesticated animals, wildlife and wildlands, that can result from forces of nature and human causes. The resulting impacts on ecosystems are unknown (Santa Cruz Genetically Engineered Crop Moratorium [Ord. 4830 § 1, 2006]).

The ordinance charges the County Agricultural Commissioner with the administration of the Ordinance. The ordinance establishes that parties in violation of the ordinance shall be guilty of misdemeanor charges, punishable by fines up to \$1,000 or by imprisonment in the county jail

of a term not exceeding six months or by both such fine and imprisonment. Any use of land, building, or premises that conflict with the ordinance shall be deemed a public nuisance, and any party who creates or maintains a public nuisance shall be liable for the costs of abatement (Santa Cruz Genetically Engineered Crop Moratorium [Ord. 4830 § 1, 2006]). The ordinance includes a “Re-evaluation by the Board of Supervisors” provision that allows the moratorium to be suspended for several reasons, including if the state or federal government should enforce a mechanism for regulating GMOs. Like previous ordinances, the Santa Cruz ordinance exempts medical and pharmaceutical uses and does not restrict the sale of foods containing GMO ingredients [Ord. 4830 § 1, 2006]).

Santa Cruz County is located along California’s Central Coast, with a population of 262,382 (U.S. Census, 2010). Agriculture contributes over \$566 million annually to the county’s economy, and the primary crops are berries, nursery plants, cut flowers, and vegetables (Santa Cruz County Farm Bureau, 2012). The Santa Cruz County Board of Supervisors received over 100 letters, e-mails, and phone calls in support of the moratorium. The apparent lack of opposition to the ordinance prompted Supervisor Mark Stone to remark that the regulation of GE crops "appears not to be controversial in Santa Cruz." (Organic Consumers Association, 2006).

San Juan County, Washington

In November 2012, citizens of San Juan County, Washington passed Initiative Measure 2012-4 through a majority vote. The measure, codified as the “Ordinance Prohibiting Growing Genetically Modified Organisms in San Juan County”, establishes the propagation, cultivation, raising or growing of genetically modified organisms within the county as unlawful. The ordinance declaration cites the desire to protect local agricultural industry and natural environment, private property rights of citizens, and the health, safety and welfare of the

community as the purpose of the measure (Ordinance Prohibiting Growing Genetically Modified Organisms in San Juan County [2012]). The ordinance does not include a ‘Findings’ section.

The ordinance establishes that any violation of the ordinance constitutes a public nuisance, and authorizes the County Attorney with administration of the ordinance. Penalties for the first violation of the ordinance include a \$250 civil infraction plus statutory assessments. The second violation constitutes a criminal misdemeanor, and is punishable by a fine of up to \$1,000, 90 days in jail, or both. The third violation constitutes a gross misdemeanor, and is punishable by a fine of up to \$5,000, 365 days in jail, or both. The ordinance exempts research and educational studies involving GMOs, provided that they are conducted in secure, enclosed laboratory settings. The ordinance does not restrict the sale of foods containing GMO ingredients (Ordinance Prohibiting Growing Genetically Modified Organisms in San Juan County [2012]).

San Juan County is comprised of 172 small islands and reefs off the coast of northwest Washington, with a population of 15,769 (U.S. Census, 2010). According to the Washington State Department of Agriculture, San Juan County has 291 farms that contribute \$4 million annually to the county’s economy (All About Feed, 2013). While agriculture is not the primary industry, the number of farms within the county grew by 29% between 2002 and 2007. Farmers in San Juan County produce a variety of crops including grass-fed meats, berries, tree fruits, and vegetables for market (year round), as well as fiber, lavender, and herbs (San Juan Islands Agricultural Network, 2013). At the time of the ordinance’s passage, no local farmers were growing GMO crops (Pennington, 2011). The County’s Comprehensive Plan identifies agriculture as an important element contributing to the quality of life enjoyed by residents and visitors to the island (Economic Development Element, 2007).

The ordinance received support from local organic farmers, local food and agriculture business owners, and other residents (Thalen, 2012; Pennington, 2013). Members of the group GMO Free San Juans explained, "GMO's are a corporate intrusion we can't afford if we seek a healthy food system. We as citizens deserve the choice" (Thalen, 2012). Opponents of the San Juan initiative quoted in the County Voter's Guide argued that "Approving this initiative would show that the residents of San Juan County are elitists, ignorant of the benefits of technological advances, and uncaring about the planet and its inhabitants" (Thalen, 2012).

Jackson County, Oregon

Jackson County, Oregon is the most recent jurisdiction to pass an initiative banning the propagation of GMOs. A group of local anti-GMO organizers gathered more than 6,700 signatures and filed a petition known as Ballot Measure 15-119 with the County in January, 2013. Citizens of Jackson County voted to approve the ordinance on May 20, 2014 (Ferris, 2014). At eight pages, the Jackson County Genetically Modified Organism Ban is longer by far than any of the other ordinances included in this analysis. The ordinance prohibits the propagation, cultivation, raising or growing of genetically engineered plants within the county (The Genetically Modified Food Ordinance [2012]). The controversial ballot measure was widely supported by local farmers and other residents, and opposed by organizations representing biotechnology corporations (Barnard, 2014; Boyd, 2014). In 2013, Oregon senators passed Senate Bill 17-12, which bars all counties other than Jackson from regulating genetically modified agriculture. The bill's emergency clause allowed it to take immediate effect, precluding efforts underway in Benton County and Lane County (Zheng, 2013). The case of Measure 15-119 in Jackson County will be explored in greater detail in Chapter 4 of this thesis, as the second of two county case studies.

Conclusion

Results of this analysis of local legislative efforts indicate that those jurisdictions, which have enacted local biotechnology regulations, are widely varied in terms of their demographics and local agricultural production. The nine communities range from urban to rural; in some places agricultural revenue contributes only marginally to total municipal or county revenue, while in other places agriculture forms the basis of the local economy. One common element among the communities was an absence of GMOs at the time of ordinance passage in all but Jackson County. Thus, by passing the regulation, communities were effectively preempting the propagation of genetically modified plants.

A number of similarities are apparent in the language and content of the ordinance texts. Each of the ordinances cites concern over cross-contamination of genetically modified material among non-GMO crops as an impetus for the measure. Many of the ordinances make reference to the unpredictability of GMOs and/or the impossibility of preventing cross-pollination. Each of the ordinances mentions a desire to preserve local agriculture, as well as human and environmental health. The focus on maintaining locally embedded agricultural production is consistent with the civic agriculture paradigm. Each of the ordinances mentions a desire to protect the health safety and welfare of citizens; which is the basis of local governments' sovereign authority to exercise police powers that protect or promote the public good. Many of the ordinances discuss the speed of approval of new GMOs, and express concern over the potential risks posed by biotechnology.

Collectively, the local land use controls purport to regulate the propagation of GMOs; but not the sale of GMO foods. The majority of the ordinances include exemptions for medical and scientific research; provided that such research occurs in a secure laboratory environment so

as to mitigate the risks of cross-pollination. Some ordinances also include exemptions for medical treatments utilizing GMOs. The administration, tenure, penalties, and enforcement of the ordinances range widely. For the most part, the passage of the local regulations appears to have been supported by grassroots groups of residents and opposed by centralized organizations, representing corporate biotechnology interests. In all communities, support for the local regulations came from local farmers and ranchers, among other types of residents. These results provide the background for my research inquiry, as well as justification for my hypothesis that agrarian county-level bans on the propagation of genetically modified organisms are primarily driven by concerns related to genetic drift and the cross-contamination of genetically altered materials. This analysis allowed me to identify potential case studies, and also to deepen my understanding of the content of the ordinances and their stated purposes. The next chapter examines the ordinances of the selected case studies counties in further detail.

CHAPTER 4. CASE STUDY COUNTIES

Civic agriculture is a locally organized system of agriculture and food production characterized by networks of producers who are bound together by place. Civic agriculture embodies a commitment to developing and strengthening an economically, environmentally, and socially sustainable system of agriculture and food production that relies on local resources and serves local markets and consumers (Lyson, 2005 p. 92).

This chapter presents a detailed analysis of the ordinances that were passed by the case studies of Mendocino and Jackson Counties. The next two sections of this chapter begin with a description of the demographic and agricultural characteristics of the respective counties, followed by a summary of the campaign processes and the outcomes of each initiative. The final section summarizes the analyses of both counties and presents key similarities and differences. The case studies are presented in chronological order of ordinance adoption. The map shown in Figure 1 provides a spatial context of the two case study counties.

Figure 1. Map of Case Study Counties



Map Created by Lydia Rae Levinson on July 18, 2014.

Mendocino County, CA

County Characteristics

Mendocino County is a rural community that is located 100 miles north of San Francisco and measures 3,506 square miles, approximately the size of Rhode Island. The county's topography is characterized by rolling hills and winding roads. Less than 3% of the county is flat land, and its highest point of elevation lies 6,954 feet above sea level. The western boundary of the county spans about 100 miles of coastline along the Pacific Ocean. The county boasts a bevy of natural resources: including redwood forests, mountains, rivers, ocean, agricultural lands, and national and state protected areas. Mendocino County is one of the original counties of California, established in 1850 at the time of statehood. Prior to 1859, the county was administered by the government of neighboring Sonoma County. Today, an elected five-member Board of Supervisors governs the county, with each member representing a distinct geographical district within the county (County of Mendocino, 2014a; County of Mendocino, 2014b).

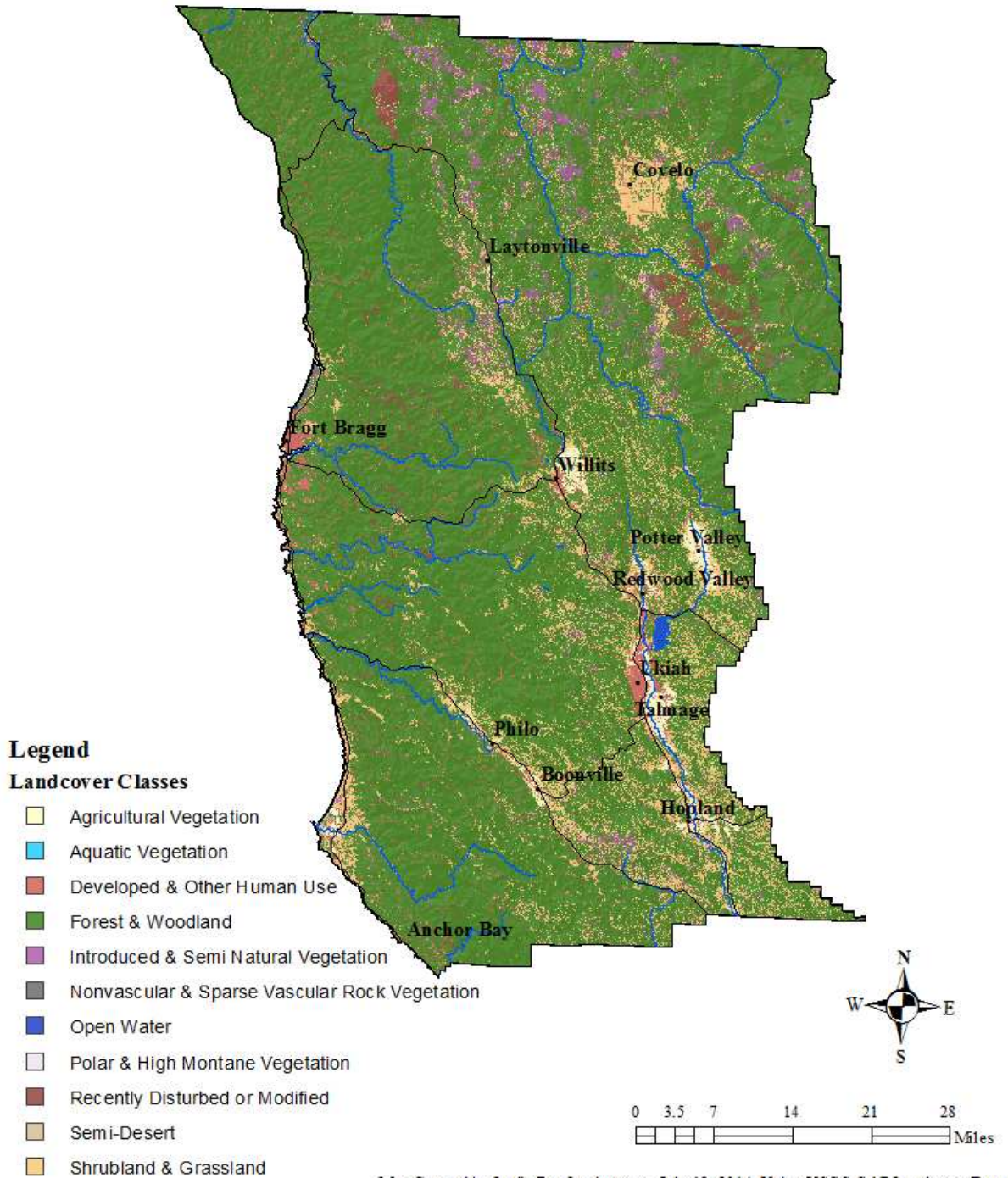
Mendocino County is comprised of four incorporated communities and some 34 unincorporated communities, with a total county population of 87,841 and a population density just over 25 persons per square mile. The majority of residents live in these incorporated and unincorporated areas, with the remainder occupying the rural areas in between. The largest city in the county is the county seat of Ukiah, which has a population just over 16,000. According to the most recent decennial census 76.5% of county residents are Caucasian, 22.2% are Latino, 4.9% are Native American, 1.7% are Asian, and 0.7% are African American (U.S. Census, 2010). In 2010, the county's median household income was \$44,645 and the seasonally adjusted unemployment rate measured 11.7% (County of Mendocino, 2010). According to the U.S. Census' Five Year American Community Survey, an estimated 19.4% of the county population

lives below the poverty level. Approximately 85% of the population over the age of 25 has at least a high school diploma, 13.1% has attained at least a bachelor's degree, and 8.4% has attained a graduate or professional degree (U.S. Census, 2012).

Agriculture, including both timber and food production, is an important industry within the county, accounting for 6.1% of total employment (County of Mendocino, 2010). In 2012, the total gross agricultural value for all commodities produced was \$216,550,651; representing an increase of 24% compared to the previous year. The leading agricultural commodity is winegrapes, with a value of \$102,305,700 in 2012; followed by timber, with a value of \$71,587,951. In 2012, the county ranked fourth in the state for timber volumes and produced approximately 9% of California's total timber harvest. The remaining \$42,657,000 accounts for the production of a diverse variety of commodities, including a number of different fruit and nut, vegetable, nursery, and field crops; as well as livestock and poultry production (County of Mendocino, 2012).

The county is home to just over 1200 farms, averaging 631 acres in size (U.S. Census of Agriculture, 2012a). Organic agriculture comprised approximately 5% of all countywide agricultural sales in 2012, far above the national rate of 0.8% that year (U.S. Census of Agriculture, 2014). Mendocino County has the highest percentage of organic or biodynamic winegrapes in the United States, and one-third of the total organic winegrape acreage in the state of California are grown in the county (Geniella, 2006). While there are no official statistics regarding marijuana production, it is estimated that roughly one-third of the county's economy is based on the cultivation of marijuana (Regan, 2009). The map shown in Figure 2 depicts the county's landcover, as well as the locations of major roads and the larger communities located within the county.

Figure 2. Map of Mendocino County, CA Landcover



Mendocino County is widely known for its progressive governance and has been called a “famously counterculture region” (Garcia, 2004). Beginning in the 1960s, the area became a mecca for members of the “back-to-the-land movement” who sought to escape the urban confines of San Francisco and embrace a simpler, more self-sufficient lifestyle by living off the grid and producing their own food (Hackett & Schwartz, 1980; Gravois, 2010). The county has a rich history of political environmentalism, as evidenced by a number of local environmental policies; including a ban on the aerial spraying of chemical pesticides in 1970 and the passage of Measure H in 2004, among many others (Walsh-Dilley, 2009).

Measure H

Mendocino County’s Measure H bans the propagation, cultivation, and growing of genetically modified organisms within the county. The Finding statement of the ordinance reads, “The people of Mendocino County wish to protect the County’s agriculture, environment, economy, and private property from genetic pollution by genetically modified organisms” (Prohibition of the Propagation, Cultivation, and Growing of Genetically Modified Organisms in Mendocino County ordinance [2004]). Measure H does not regulate genetically modified bacteria or byproducts, nor does it regulate the sale or labeling of GMO food and feed (Walsh-Dilley, 2009). The ordinance provides definitions for the following terms: ‘Agricultural Commissioner’; ‘DNA or deoxyribonucleic acid’; ‘genetically modified organisms’; and ‘Organism’. The ordinance’s interpretation of DNA mistakenly identifies it as a protein rather than a nucleic acid, which was a major source of contention during the campaign (Pechlaner, 2012).

Unlike subsequent ordinances passed in other communities, Measure H makes no mention of exempting genetically engineered organisms for the purpose of medical or scientific

research. The ordinance charges the County Agriculture Commissioner with the authority to enforce the measure and outlines the process for the notification violation and the assessment of penalties for violations. The Commissioner is to provide notice to any person, firm, or corporation found in violation of the ordinance, and the second party has five days to respond to the notification. If it is determined that a violation has occurred, the organisms shall be subject to confiscation and destruction in a timely manner, so as to mitigate the potential for genetic pollution (Prohibition of the Propagation, Cultivation, and Growing of Genetically Modified Organisms in Mendocino County ordinance [2004]). Measure H is supported and enabled by Article XI Local Government, Section 7 of the California Constitution which establishes the rights of local jurisdictions to make and enforce their own ordinances, provided that they are not in conflict with general laws; as well as the State's initiative and referendum system which provides citizens with the power to propose statutes and amendments through direct democracy (Cal. Const., art. II, § 7; Cal. Elections Code § 9100-9126).

Adoption of Measure H

The process of ordinance adoption began in 2003, when a small coalition of residents formed the GMO Free Mendocino group and began collecting signatures to put the measure on the ballot. This initial group included a retired cancer researcher and local organic brewpub owner, a retired professor of philosophy, and an attorney. More than 4,000 signatures were collected, and on December 2, 2003 the Mendocino County Board of Supervisors unanimously voted to place the measure on the March, 2004 ballot (Anderson, 2003). On December 19, the California Plant Health Association, representing a consortium of biotechnology pesticide and fertilizer corporations by the name of CropLife America, filed suit against the Mendocino County Elections Clerk and the authors of the ballot statement. The plaintiffs alleged that the

language of the arguments in support of the measure were misleading and inaccurate. The lawsuit failed on December 24, when a local judge declared that the language was no more misleading than the statements offered against the ban; and that county residents deserved the chance to decide for themselves whether or not to support the measure (Lee, 2004; GMO Free Mendocino, 2003).

One of the defendants in the lawsuit was quoted as saying, “This is the first salvo in a David and Goliath struggle, in which Measure H—which will benefit the people and the environment of Mendocino County—is under attack by unprincipled multinational corporations that care only for their own profits. They have no qualms about subverting the democratic process” (GMO Free Mendocino, 2003). Several supporters of the ordinance that were interviewed for this study expressed the opinion that the lawsuit worked in favor of the GMO Free Mendocino campaign. They explained that the suit effectively galvanized county residents’ distrust for corporations interfering with community matters. One informant indicated that this anti-corporate sentiment might be rooted, at least in part, in the historical exploitation of the county’s natural resources by corporate logging firms.

After winning the court battle, GMO Free Mendocino launched an impressive grassroots campaign in favor of the measure; which included numerous speaking engagements, panel discussions, printed publications, radio ads, and a highly effective websites. From the beginning, the campaign focused on the local nature of the measure, which allowed residents to take ownership of the issue and helped to generate buy-in. The largely decentralized campaign relied primarily on between 150-200 local volunteer activists and included only one paid campaign organizer. This structure allowed the group to operate on a budget of just \$120,000; a modest amount when compared to the nearly \$700,000 spent by the measure’s opponents. It is worth

noting that more money was spent on Measure H than any other initiative in the history of the county. Apart from two bequests totaling approximately \$35,000 from the Center for Food Safety and the Organic Consumers Association, the majority of GMO Free Mendocino's campaign funds were contributed by residents through some 1500 separate donations ranging from \$5 to \$100 (Walsh-Dilley, 2009; Pechlaner, 2012).

Because the county spans such a vast geographic area, GMO Free Mendocino organizers broke it down into nine regions and appointed a local campaign coordinator for each location. Thus, each leader was an "expert" in the needs and issues most relevant to their specific community; which allowed them to tailor their strategies and tactics to appeal to the local constituents on a place-by-place basis (Walsh-Dilley, 2009). Campaign organizers strategically sought out endorsements from prominent figures within the community in order to garner greater public support (Lotter, 2004). Early on, the group received pro bono advice from a veteran of the San Francisco advertising industry on the importance of maintaining positivity in radio and print ads. He also suggested that they refrain from directly responding to the allegations of the opposing campaign. GMO Free Mendocino organizers strictly adhered to these recommendations, and many of the informants maintain that it was one of the keys to the success of the campaign. Rather than focusing on the perceived negative aspects of biotechnology, campaign advertising concentrated on the positive features of the community which supporters regarded as being worth protecting.

Many of the key informants that were interviewed for this study characterized the campaign as being primarily focused on educating the public about GMOs. In a public statement given during the campaign, one of the group's leaders explained that even if it failed to pass, at least the public would gain a better understanding of the threats posed by genetic engineering

(Lotter, 2004). The ballot statement in favor of Measure H outlines the following two arguments of the GMO Free Mendocino campaign: 1) GMOs pose great risks to county agriculture and commerce through the cross-pollination of organic crops and threaten the economic viability of organic and conventional wineries. Moreover, the banning of GMO crops might make Mendocino crops more attractive in markets where there is a demand for organic and pure foods and; 2) Cross pollination of genetically engineered materials would irreversibly alter the genetic makeup of native plants and trees, create new superweeds, and disrupt important ecosystems (GMO Free Mendocino, 2004).

Additional arguments appearing in GMO Free Mendocino's campaign materials cite the need to protect human health, local farmers, and private property rights from the risks posed by genetic drift (GMO-Free Mendocino, 2004). The ban received wide support from local farmers, winegrowers, healthcare professionals, realtors, public officials, and resident members of the nonprofit Mendocino Organic Network, among others (Lotter, 2004; Kupfer, 2004; Somers, 2004; Walsh-Dilley, 2009; Pechlaner, 2012; Powell, 2004). Additional support came from numerous individuals and organizations outside of the community, including renegade scientists like UC Berkeley microbial ecologist and mycologist Ignacio Chapela and UC Berkeley agroecology professor Miguel Altieri; as well as Canadian farmer and ant-GMO advocate Percy Schmeiser; documentary filmmaker Deborah Coons-Garcia; Andrew Kimbrell with the San Francisco office of the Center for Food Safety; and Ronnie Cummins of the Minnesota-based Organic Consumers Association, among others (Walsh-Dilley, 2004; Lotter, 2004; Walden, 2004; Jacobs, 2004).

The group opposing the ordinance, Citizens Against Measure H, launched an intense two-month campaign denouncing the measure. The Citizens Against Measure H campaign was run

from the Washington D.C. offices of CropLife America and lacked the sort of grassroots, locally organized presence of the GMO Free Mendocino contingent (Walsh-Dilley, 2009). Like GMO Free Mendocino, Citizens Against Measure H participated in public forums including panel discussions and debates, as well as producing print and radio advertisements and mailers to convey their campaign message (Walsh-Dilley, 2009; Kupfer, 2004). However, the group took a markedly different approach in its campaign messaging by focusing almost exclusively on negative advertising. Rather than concentrating on the potentially positive aspects of genetic engineering, the campaign instead emphasized that Measure H was poorly written and that the ordinance would violate the property rights of Mendocino County residents (Lee, 2004; Walsh-Dilley, 2009; Geniella, 2003).

In its campaign publications, Citizens Against Measure H frequently referred to the ballot initiative as “the H Bomb” (Clark & Teachout, 2012); arguing that the expense of administering the ordinance would cause tax increases and threaten the available funding for critical county services (Somers, 2004). Campaign ads claimed that Measure H would lead to increasing government intrusion into the private lives of residents and that it would deny local farmers access to future lifesaving technologies promised by GMOs (Geniella, 2003; Lee, 2004). The campaign argued that the regulation of GMOs should fall to the state and federal government, not local jurisdictions (Pogash, 2004). The campaign was criticized for what some residents saw as “unethical tactics”. One deceptive mailer indicated that the Democratic Party did not support Measure H; when in fact, the Mendocino County Democratic Committee had voted in favor of the ordinance. Additionally, rumors were circulated that GMO Free Mendocino was buying votes by allegedly paying residents to attend focus groups (Walsh-Dilley, 2009).

Roughly 94% of the funding for Citizens Against Measure H came from CropLife America (Lee, 2004). Of the more than half a million dollars spent by the campaign, just \$5,000 was contributed from within the county (Geniella, 2004; Giusti et al., 2005). At least half of all funding was spent outside the county on market research, campaign and legal advisors, and pro-biotechnology “push-poll” telephone calls conducted by an out-of-state marketing firm (Walsh-Dilley, 2009). The campaign was represented “on-the-ground” by just a few local residents acting as spokespeople, and three paid local campaign organizers (Walsh-Dilley, 2009; Lee, 2004). Support for Citizens Against Measure H came from area farmers, winegrowers, medical professionals and other county residents, along with local and state Farm Bureau leaders and members, representatives of the county’s agricultural extension service, and researchers of biotechnology at U.C. Davis and U.C. Berkeley (Lee, 2004; Somers, 2004; Lotter, 2004). Some of the local spokespeople publically expressed their concerns over being linked to the corporations behind the campaign. One local grape grower and Citizens Against Measure H supporter, explained, “I hate to feel like a whore for the big companies. We happen to have the same goals. We have different motivations” (Lee, 2004).

Outcome

On March 2, 2004 Measure H passed by 56.34% of the vote, with 98% of the precincts reporting (County of Mendocino, 2004). It was a landmark event, as the vote meant that Mendocino County was to become the first jurisdiction in North America to pass a locally binding ordinance regulating the propagation of genetically engineered organisms. The Campaign Coordinator of GMO Free Mendocino explained to the press:

This is a great day for local democracy. It's a demonstration of citizens taking control at the most immediate level, which is at home in the places where they live. It's an example of local government at its best, acting to protect its citizens and the local economy and future generations. In our present climate of corporate domination of the food system this is a reclaiming of responsibility for agriculture at a local level. This amazing local campaign demonstrates where

transnational corporations are vulnerable. No amount of money can replace the love and commitment of people who care passionately about the place where they live (Kupfer, 2004, para. 6).

The coordinator of the Citizens Against Measure H campaign expressed the opposition's disappointment and said, "Mendocino County is going to be harmed by this measure" (Geniella, 2004). Another campaign representative spoke to the ideological nature of the campaign and its abbreviated timespan, explaining: "The tactic of creating fear of the unknown was, in this short time frame, difficult to disarm" (Lau & Lee, 2004).

Scholarly articles written in the wake of the ordinance's passage cite the decentralized, grassroots dynamic as a primary element of the GMO Free Mendocino campaign's success. This approach encouraged citizen democracy by focusing on the preservation of the locally embedded agricultural system and by engaging residents throughout the entire campaign process (Walsh-Dilley, 2009). Moreover, the lawsuit initiated by the California Plant Health Association galvanized residents' perception that the opposition represented the interests of the biotechnology industry and invoked pre-existing anti-corporate sentiment (Walsh-Dilley, 2009; Pechlaner, 2012). In contrast to GMO Free Mendocino's localized approach, the opposing campaign's strategy was devised by out-of-state consultants and marketing groups that were less familiar with the workings of the county (Walsh-Dilley, 2004).

Mendocino County's ordinance is sometimes dismissed as being largely symbolic since there were no GMOs being grown within the county at the time of its passage (Lau and Lee, 2004; Walsh-Dilley, 2004). Yet, Measure H attracted national and international attention, and is credited as the impetus for subsequently enacted measures throughout the United States and abroad (Powell, 2004; Meadows, 2004; Pechlaner, 2012; Lotter, 2004; Walsh-Dilley, 2009). Immediately after the passage of Measure H, the biotechnology industry launched a massive initiative to pass state-level preemption legislation prohibiting the local regulation of GMOs in

California and throughout the rest of the United States. While the California preemption legislation failed to pass the State's Senate due to the resulting citizen backlash, similar bills were approved in at least 21 other states (Pechlaner, 2012; Clark & Teachout, 2012). Since 2004, seed preemption bills have been approved by some of the nation's top agricultural commodity-producing states, including Florida, Illinois, Iowa, Kansas, Minnesota, and Texas, among others (Organic Consumers Association, 2013).

Jackson County, OR

County Characteristics

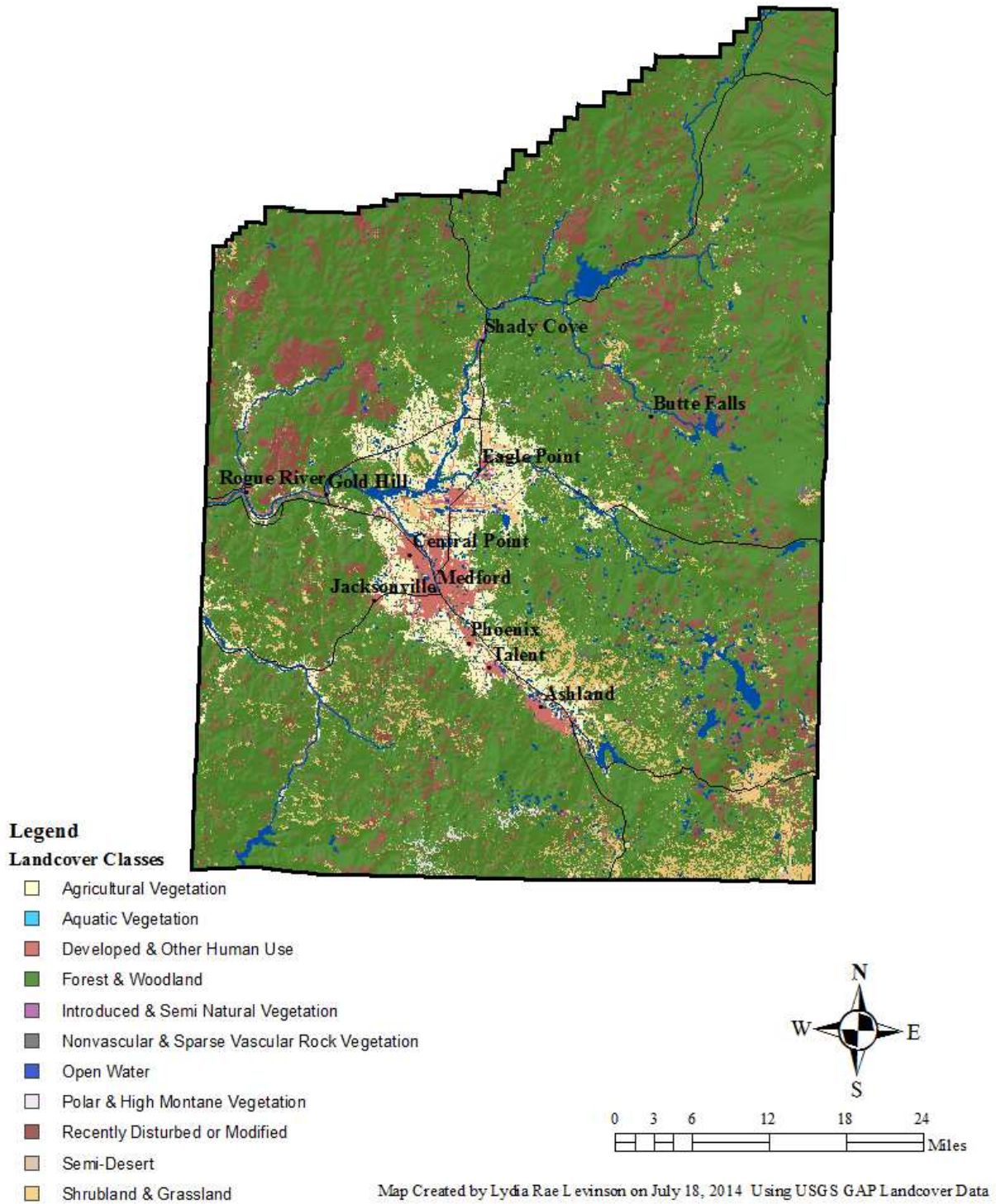
Jackson County is a rural community located in southwestern Oregon, along the California border, which measures 2,802 square miles in area. Jackson occupies the upper portion of the Rogue River Valley, and county elevation varies widely from approximately 1,000 to 7,000 feet above sea level. The county's topography is characterized by deeply indented river valleys, which are separated by mountains and ridges. Like Mendocino, Jackson County is rich in natural resources, including forests, mountains, rivers, ocean, agricultural lands, and national and state protected areas. Jackson County was established in 1852 and is governed by a publicly elected three-member Board of Commissioners (County of Jackson, 2006).

Jackson County is the sixth most populated county in the state of Oregon, with a total population of 204,630 and a population density of 73 persons per square mile. Approximately 70% of residents are located in the county's 11 incorporated cities, with the remainder residing in the 20 unincorporated places and the rural areas in between. The largest city in the county is the county seat of Medford, which has a population 74,907 (County of Jackson, 2014). According to the most recent decennial census, 88.7% of county residents are Caucasian, 10.7% are Latino,

1.2% are Native American, 1.2% are Asian, and 0.7% are African American (U.S. Census, 2010). According to the U.S. Census' Five Year American Community Survey, the county's median household income is \$43,664 and the county unemployment rate measures 7.4% (U.S. Census, 2012). An estimated 16.6% of the county population lives below the poverty level (U.S. Census, 2012). Approximately 89.4% of the population over the age of 25 years old has attained at least a high school diploma, 14.8% has attained at least a bachelor's degree, and 9.6% has attained a graduate or professional degree (U.S. Census, 2012).

Historically, agriculture and timber have been Jackson County's dominant industries. In recent years the county's economy has become much more diversified; presently timber and agriculture account for just 2.9% county employment (County of Jackson, 2014; U.S. Census, 2012). The map shown in Figure 3 depicts the county's landcover, as well as the locations of major roads and the larger communities located within the county.

Figure 3. Map of Jackson County, OR Landcover



In 2012 Jackson County harvested 89,321,000 linear board feet of timber (Oregon Department of Forestry, 2013). That same year, the county's gross farm and ranch sales totaled \$64,127,000; representing a decrease of nearly 5% compared to the previous year (Oregon Department of Agriculture, 2013; Oregon Department of Agriculture, 2012). The leading agricultural commodities in the Rogue Valley are fruits, tree crops, nuts, and berries; which collectively accounted for \$26,766,000 in 2012. Additional commodities of importance include cattle and calves, valued at \$19,955,000; nursery products valued at \$4,475,000; "other" crops and hay valued at \$3,522,000; and vegetables, melons, potatoes, and sweet potatoes at \$1,744,000 (U.S. Agricultural Census, 2012b). The Rogue Valley is becoming increasingly known for its wine production, and in 2011 Jackson County produced 4,047 tons of winegrapes (Ancel, 2013). The county is home to approximately 1,722 farms, averaging 124 acres in size (U.S. Agricultural Census, 2012b). Organic agriculture comprised just over 5% of all countywide agricultural sales in 2012; far above the national rate of 0.8% that year, and slightly higher than Mendocino County's rate (U.S. Agricultural Census, 2014).

Jackson County was another destination for the back-to-the-land movement of the 1960s and 1970s, which culminated in the formation of several communal living settlements by the 1980s (Engeman, 2009). In recent years, Jackson has struggled to maintain its small-town values in the face of tremendous growth and development (County of Jackson, 2014). The county's farms are smaller on average than those of many other agricultural areas in the United States, and many farmers and ranchers are struggling to keep up with rising agricultural costs (Stiles, 2014). Additionally, the loss of federal timber replacement revenues, commonly known as O&C funds, has had detrimental impacts upon the county's general funds and its ability to provide county services (Stricker, 2014). Jackson County is widely regarded as a politically conservative

community, apart from the notoriously progressive city of Ashland (Spence, 2013); yet in May, 2014 the county became the first jurisdiction in Oregon to ban the propagation of GMOs.

Measure 15-119

Jackson County, Oregon's Measure 15-119 makes it unlawful to propagate, cultivate, raise, or grow genetically engineered plants and enables the county to recoup expenses incurred in the abatement of genetically engineered plants. The ordinance supports the county's stated goal of protecting the health, safety, and welfare of its citizens. The ordinance promotes the economic security and the commercial value of county agricultural production by safeguarding producers from damages or diminishing values due to genetic contamination from GE crops. The Finding statement of the ordinance enumerates a set of eight items that pertain to the speed at which genetically engineered crops are produced; the potential risks and long-term health and environmental effects of GMOs; the potential economic harm that genetic drift may cause to non-GMO growers, particularly organic farmers; the right of all citizens to grow organic produce; and the potential contamination of citizen gardens posed by pollen drift of genetically engineered crops. The Finding section also proclaims that a ban on genetically engineered crops does not deprive farmers from obtaining economic profits (The Genetically Modified Food Ordinance [2012]).

The ordinance provides definitions for the following terms: 'Board of Commissioners', 'genetically engineered', 'DNA', 'organism', 'organic agriculture/farming', 'organic', 'plants/crops', 'person', and 'franchised collector'. The ordinance includes an exemption clause that establishes medical and educational research activities as exempt from the regulation provided that they are conducted under secure, enclosed laboratory conditions and that utmost precautions are taken to prevent the release of any genetically engineered materials.

Healthcare uses for the purpose of diagnosis, care, or treatment of human patients are also exempted. The Implementation section of the ordinance establishes that upon enactment, existing GE plants must be harvested, destroyed, or removed from the county within 12 months. The ordinance grants the State of Oregon jurisdiction for all violations of the ordinance. The ordinance states that any violation of the ordinance shall not be construed as a nuisance or a trespass as those claims are defined by the common law or ORS 30.932, (ORS 30.9321993 c.792 §33; 1995 c.703 §2). Instead, the ordinance outlines a set of penalties and abatement procedures (The Genetically Modified Food Ordinance [2012]).

The ordinance grants the county and any private person or group of private persons the authority to enforce the regulation through action brought in court and establishes that in such a suit neither party shall be entitled to recover the damages or costs of litigation. The ordinance cedes the County Code Enforcement officer the authority to inspect the property suspected of violations, provided that a search valid warrant is obtained from the Circuit Court of the State of Oregon prior to inspection. Any party suspected to be in violation of the ordinance shall be notified that any organisms in violation of the ordinance shall be subject to confiscation or destruction. Notified parties shall have 15 business days to respond to the notification with evidence that they are not in violation, or that the organisms in violation have been destroyed or removed. After the 15-day period, the county has another 15 business days to review any evidence provided by the party in suspected violation of the ordinance, and determine whether or not a violation has taken place (The Genetically Modified Food Ordinance [2012]).

Upon determining that a violation has occurred, the County shall promptly issue notice of the violation of the ordinance upon the defendant. Upon receipt of said notice the defendant shall have 15 business days to appeal the decision to the Circuit Court of the State of Oregon. If the

defendant does not appeal the determination, or if the County prevails in such an appeal, upon reasonable notice, the County shall promptly destroy or remove the genetically engineered plants in a manner that will minimize genetic contamination or harm. Such destruction or confiscation shall be undertaken during daylight hours. Any party or parties found to be knowingly or willfully responsible for the violation of the ordinance may be held responsible for all administrative and abatement costs incurred by the County. However, enforcement costs shall not be imposed upon any party whose violation is not knowing or willful. The ordinance describes in great detail the specific procedures for abatement by the County in the event that the party in violation fails to abate the violation, beginning with the notification of abatement by the County, and including both an appeal process after notice of abatement by the County and a hearing process. The ordinance allows the County to recover the costs of abatement from the party in violation and outlines the procedures for the recovery of abatement costs, including the assessment of abatement costs as liens against the property (The Genetically Modified Food Ordinance [2012]).

Measure 15-119 is supported and enabled by Article I, Section 1 of the State of Oregon Constitution which establishes the natural rights inherent in the people to alter, reform, or abolish the government in such a manner they think proper to preserve the peace, safety, and happiness of the people (ORS. Const. art. I, § 1). Article IV, Sections 1(5) and 10 of the State of Oregon Constitution establish the powers of initiative and referendum for local ballot measures in all Oregon cities and counties, respectively (ORS. Const. art. IV, § 1(5); ORS. Const. art. IV, § 10). The laws governing initiatives in Oregon are outlined in the Oregon Revised Statutes, Chapter 250 (Or. Rev. Stat. 250.005 to 250.043).

Adoption of Measure 15-119

The process of ordinance adoption began in 2012, when a local organic farmer discovered that a neighboring farmer was growing GM sugar beet seeds under contract with Swiss biotechnology company, Syngenta. The proximity of the genetically engineered plants violated the U.S. Department of Agriculture's requirement of a minimum four-mile separation between GM beets and other plants of the same family, which includes both Swiss chard and table beets. The organic farmer became concerned that the GM sugar beet plants might cross-pollinate with his chard and table beet plants, so he reported the violation to Syngenta. A Syngenta representative informed him that there were many other GM beet seed production fields, ranging in size from one-quarter acre to 10 acres, located throughout the Rogue Valley (Organic and Non-GMO Report, 2012).

Within 72 hours of his discovery, the organic farmer called a meeting of Jackson County farmers and citizens to alert them of the presence of GM sugar beet fields. A group of approximately 50 individuals, decided to organize a ballot initiative for an ordinance that would regulate the propagation of GMOs within the county, and GMO Free Jackson County was born (Darling, 2012). The County Commissioner was concerned that such an ordinance might prove costly to enforce, so he encouraged the local farmers to work with Syngenta to find a way to co-exist. A series of meetings was held, during which the farmers and Syngenta discussed the formation of a seed association that would map where GMO crops might be planted and create a buffer system to prevent cross-contamination of non-GMO crops. When asked to identify the locations of existing sugar beet fields, Syngenta refused. At the final meeting, it was announced that the company no longer saw the point in participating in the negotiations and the two Syngenta representatives in attendance walked out. The move shocked farmers and citizens in

attendance, and was interpreted as an indication that the biotech industry had no interest in being a part of the community (Wilson, 2013).

Together, members of GMO Free Jackson County collected over 6,700 signatures, which allowed the initiative to be approved to appear on the May, 2014 ballot (Wilson, 2013). In response to the threat of local regulation, the Oregon State Legislature rushed to pass seed preemption legislation that would prohibit local GMO bans. Senate Bill 663, widely referred to as “Oregon’s Monsanto Protection Act”, included an emergency clause that would allow it to be enacted immediately (Zheng, 2012). The bill prompted considerable public outcry and was defeated in July, 2013. A few months later, the bill was resurrected as Senate Bill 863; appearing in the legislative special session. It was approved by the Oregon Senate in September and by the House in October. Jackson County was exempted from the bill as it had already collected the allotted amount of signatures to appear on the ballot, but anti-GMO campaigns in nearby Benton and Lane Counties were informed that they would not be allowed to vote on local GMO bans (Zheng, 2013).

Proponents of Measure 15-119 ran a decentralized, grassroots campaign that focused largely on educating the public (Ayers, 2014; Moriarty, 2014; Faryl, 2014; Wheeler, 2014; Bourke, 2014). The campaign used social media; radio, television, and print ads; and phone banking to reach voters. However, the campaign organizers interviewed for this study explained that they quickly found that having face-to-face conversations was the most effective means of communicating with residents. Informants strongly emphasized the importance of personal communication, which they accomplished by canvassing door-to-door and speaking to small audiences. This approach allowed campaign supporters to develop meaningful dialogues with

voters by answering questions and sharing personal stories. While many of their events and campaign materials made mention of the scientific research related to biotechnology, organizers found that sharing stories was a much more valuable means of connecting with the public.

Campaign events included panel discussions, debates, documentary film screenings, marches, rallies, and even a tractor brigade (Our Family Farms Coalition, 2014a; Nichols, 2014; Ayers, 2014). This wide variety of activities appealed to residents of all ages and backgrounds, and allowed the group to educate voters while maintaining a fun and festive atmosphere (Ayers, 2014). Events took place in grange halls, libraries, and schools in towns throughout the county. Jackson County's Measure 15-119 was widely supported by a coalition of 600 resident volunteers, which included more than 150 family farmers and ranchers, citizen gardeners, food service providers, healthcare providers, business owners, and other citizens. The measure also received support from various local organizations, including two political action committees: the afore-mentioned GMO Free Jackson County and the Our Family Farms Coalition (Gillam, 2014). The campaigns worked with existing local GMO-free movements formed in Eugene and Portland (Darling, 2012).

The campaigns sought strategic endorsements from local small businesses and community and agricultural organizations including the local chapter of the National Grange Order of the Patrons of Husbandry, one of the oldest family farm groups in the country, as well as the Southern Oregon Seed Growers Association (Nichols, 2014; Jackson County Voters' Pamphlet, 2014). Additional support came from businesses and organizations located outside of the county, including Dr. Bronner's Magic Soaps; Consumer Reports; the Center for Food Safety; the Organic Consumers Fund; and Mercola.com, a natural health website (Zheng, 2014;

Nichols, 2014). Individuals from outside the community that provided assistance through speaking engagements and public forums included GMO activists Howard Vlieger and Jeffery Smith, along with researchers from Oregon State University, and a retired EPA senior scientist (Darling, 2014; Wheeler, 2012; Wilson, 2013; Our Family Farms Coalition, 2014c).

The primary arguments in favor of Measure 15-119 included the following: 1) the economic effects of cross-contamination events in terms of the ability of non-GMO farmers to sell their crops to consumers and international markets that demand GMO-free products; 2) even the threat of potential contamination could risk the reputation of non-GMO producers and undermine the economic viability of Jackson County farmers, and; 3) the health risks posed by the increased use of herbicides associated with genetically modified crops. The campaigns also emphasized their position that genetically engineered crops primarily benefit corporate biotech interests like Monsanto over local family farmers. Additional arguments were proffered in response to the opposing campaign's assertions that the measure would be an economic burden for the County to enforce (Our Family Farms Coalition, 2014b). It is worth noting that campaign arguments on both sides of the issue avoided the debate of whether or not GMO foods are harmful to people or the environment (Jefferson Public Radio, 2014).

Campaign funding in favor of Measure 15-119 amounted to a total of \$411,739, approximately three quarters of which was contributed by local residents and organizations (Oregon Secretary of State, 2014a; Sarich, 2014). The largest donations from outside the county included \$40,000 from Dr. Bronner's Magic Soaps, \$30,000 from the Organic Consumers Fund, and \$25,000 from Mercola.com (Zheng, 2014). The campaigns in support of the issue were outspent by the opposition by a margin of 2-1 (Dubois, 2014). Early on, it became apparent that the opposing campaign was receiving hundreds of thousands of dollars in outside spending from

biotechnology corporations (Nichols, 2014). Measure 15-119 supporters made every effort to notify the public of this dynamic through campaign materials, press releases, and conversations with the press (Our Family Farmers Coalition, 2014a; Nichols, 2014). As one campaign organizer explained, “Indeed, they do want to squash us like a bug. This is about whether we are going to turn the keys to agriculture in the Rogue Valley over to a multinational corporation or we are going to say no and stand up to protect our family farms’ future” (Nichols, 2014). This strategy allowed GMO Free Jackson and the Our Family Farmers Coalition to appeal to local residents and farmers who resented the outside interference.

Opposition to Measure 15-119 came primarily from the Good Neighbor Farmers committee, who sponsored the Protect Oregon Farmers campaign. In contrast to the grassroots, decentralized organization of GMO Free Jackson and Our Family Farmers Coalition, the Protect Oregon Farmers campaign was a professional, centralized operation run by paid consultants from outside of the community. According to members of the group that were interviewed for this study, the campaign in opposition to Measure 15-119 operated in much the same manner as any modern political campaign. The campaign organizers began by hiring a Portland-based political consulting company to analyze the voting bloc through base polling and market research. They looked at past elections, voter registration by party, and the local impacts of the ‘Occupy’ movement, which they believed supporters of the ban were closely tied to. Statistical analysis allowed the campaign to identify which segments of the population were most likely to oppose the measure, and then carefully construct a narrative that would appeal to this population.

The Protect Oregon Farmers campaign utilized television commercials, radio and print ads, and mailers to convey its campaign messaging. While the campaign also participated in public forums, debates, speaking engagements, and rallies, it did not place much emphasis on

face-to-face interactions with the public. The campaign received key endorsements from both the Jackson County Farm Bureau and the Jackson County Cattlemen's Association, which allowed it to draw wide support from the hundreds of members of these two organizations. Additional support came from local farmers, businesses, organizations, elected officials, and other residents (Protect Oregon Farmers, 2014a).

Support from outside the county came from six of the nation's largest agricultural and chemical corporations, including Monsanto, DuPont, Pioneer, Bayer Cropscience, BASF Plant Science, Dow AgroScience, and the multinational Swiss company, Syngenta; as well as from organizations like the Southern Minnesota Beet Sugar Cooperative, the Oregon Cattlemen's Association, the Oregon Farm Bureau, Oregon Women for Agriculture, the Oregon Seed Council, the Oregon Dairy Farmers Association, and Oregonians for Food and Shelter (Reuters, 2014; Protect Oregon Farmers, 2014a). Individual supporters from outside the community included Oregon State Senators Alan Olsen and Doug Whitsett (Protect Oregon Farmers, 2014a). A professor of forest biotechnology from Oregon State University was brought in for a public speaking engagement, and a Portland-based conservative radio host taped a live broadcast in the county (Ashland Daily Tidings, 2014).

The primary arguments against Measure 15-119 presented by the Protect Oregon Farmers campaign included the following: 1) the cost of administering the measure would divert funds from important county services; 2) the cost would further aggravate Jackson County's exceeded revenues; 3) the ordinance would lead to expensive lawsuits which would threaten both farmers and taxpayers; 4) the ordinance would empower the local government to access and confiscate private property, and; 5) the regulation would prohibit residents from access to genetically modified garden plants and medical marijuana varieties (Protect Oregon Farmers, 2014b). The

campaign frequently cited a report from the Jackson County Administrator, which estimated the potential annual expense of administering the ordinance as up to \$219,000 (Dewey, 2014). The campaign also presented a number of “myths vs. facts” statements in response to the arguments of GMO Free Jackson County (Protect Oregon Farmers, 2014b). The Protect Oregon Farmers campaign received a total of \$928,764 in contributions, the majority of which came from sources outside of Jackson County. Contributions from major biotechnology corporations accounted for \$530,000 of the campaign’s finances (Oregon Secretary of State, 2014b).

Outcome

On May 20, 2014, Jackson’s County’s Measure 15-119 passed with of 65.89% of the vote and 100% of the precincts reporting (Jackson County Elections Department, 2014). One supporter of the Protect Our Family Farmers campaign told the press, “We fought the most powerful and influential chemical companies in the world and we won” (Zheng, 2014). The GMO measure in neighboring Josephine County received voter approval on the same day. However, it remains to be seen whether that initiative will be legally enforceable as it is not exempted by Senate Bill 863 (Taylor, 2014). The President of the Oregon Farm Bureau issued the following statement: “Regrettably ideology defeated sound science and common sense in Jackson County. We respect the voice of the voters, but remain convinced Measure 15-119 is bad public policy. While this election is over, this debate is not. We will continue to fight to protect the rights of all farmers to choose for themselves how they farm” (Dubois, 2014).

The adoption of Measure 15-119 made Jackson the first Oregon community to legally ban the propagation of genetically modified crops, and garnered national media attention (Gillam, 2014; Faryl, 2014; Moriarty, 2014). The campaign has been widely lauded as a “David and Goliath” struggle (Barnard, 2014; Taylor, 2014). Mere hours after the ordinance’s passage,

the Salem-based Oregonians for Food and Shelter announced that it was considering filing suit; alleging that measure violates Oregon's right-to-farm legislation (Perkowski, 2014). However, Measure 15-119 was deliberately drafted so as not to be in conflict with the right-to-farm law, and is predicted to withstand any legal challenges (The Oregonian-Portland, 2014; Perkowski, 2014).

Conclusion

The two rural, agrarian counties described in this chapter share a number of similarities in terms of their topography, demographic composition, and agricultural production. Both counties are characterized by varied terrain that includes mountains, forests, water bodies, and agricultural lands. Mendocino County is larger in area than Jackson County, with a much smaller population; accounting for the difference in population densities between the two places. However, the demographic characteristics coincide in that both case studies are mostly white communities, with median household incomes of roughly \$44,000 and poverty rates between 16 and 19%, and approximately 85-89% of the population over age 25 has attained at least a high school diploma (or the equivalent). Both places were part of the back-to-the-land movement of the 1960s and 1970s, but while Mendocino County is famous for its progressive politics, Jackson County is regarded as much more conservative.

Timber and agriculture are important industries in each county, and both places boast a diverse variety of agricultural commodities. Mendocino County enjoys higher agricultural revenues, and the agricultural sector accounts for a higher percentage of county employment than it does in Jackson County. While the number of farms in each county is similar, Jackson County's average farm size is considerably smaller than Mendocino County's. Winegrapes are

the leading agricultural commodity in Mendocino, but winegrape production in the Rogue Valley is rapidly expanding. Organic agriculture is an important sector of the agricultural industry of both places; accounting for approximately 5% of total agricultural sales, which is more than five times the national average.

The texts of the GMO ordinances enacted by the two counties share a few key commonalities, as well as several important distinctions. Both ordinances ban the propagation, cultivation, and growing of genetically modified organisms within the county, but unlike Jackson's ordinance, Mendocino's ordinance does not expressly exempt scientific and medical research and treatment. While Mendocino's ordinance mistakenly defines DNA as a protein, Jackson's ordinance includes the correct definition. Jackson County's ordinance is eight pages and includes a list of findings and a detailed description of the process of administration and enforcement. In contrast, Mendocino County's ordinance is less than one and one-half pages; does not contain a findings section, and does not describe in detail the process of administration. Both ordinances are supported and enabled by the respective state constitutions, which establish the local initiative, and referendum mechanisms that allow citizens to petition for and enact local regulations.

While the processes by which the ordinances were adopted in each county bear many similarities, there are a number of key differences in the campaign strategies and tactics that were employed. In both counties, the measures proved to be controversial topics that focused national attention on the two rural, agrarian communities. Both measures were citizen-sponsored ballot initiatives that required supporters to collectively engage in the collection of the requisite number of signatures in order for the issues to appear on the county ballot. Supporters of the GMO bans in both Mendocino County and Jackson County ran decentralized, grassroots campaigns that

were primarily organized by resident volunteers, and were chiefly funded by contributions from individuals and organizations within the counties. In both places, the campaigns opposing the land use controls were organized and run by professional consulting firms located outside of the community.

In both Mendocino and Jackson Counties, the campaigns in support of local GMO regulation focused primarily upon educating the public. In Mendocino County the campaign focused on communicating to the public the potential environmental and human health risks associated with GMOs, as well as the risks that cross-contamination posed to local farmers and gardeners. In Jackson County, the educational component was primarily focused on the social and economic threats that cross-contamination posed to Organic and non-GMO producers. In both counties, the messages of the campaigns opposing the measures focused largely on the perceived government intrusion that was predicted to accompany the administration of the ordinance, as well as the notion that the counties would be denied access to benefits of future biotechnology developments. In the case of Jackson County, additional emphasis was placed on the projected costs of administering the ordinance.

In each of the counties, the campaigns both for and against the regulation held similar public events and distributed campaign materials through similar mediums. However, in both places the campaigns in support of the ordinances were far outspent by the campaigns opposing the ordinances. These latter campaigns were largely funded by biotechnology corporations from outside of the communities. The campaigns in favor of the measures were supported by area farmers, medical professionals, local businesses, and other citizens. The campaigns against the measures received support from farmers, local businesses, and other citizens. While both measures were successfully passed, each was subject to threats of legal action. The next chapter

presents the research findings pertaining to the motivations of the citizens who campaigned in support of local GMO regulations in both Mendocino and Jackson Counties.

CHAPTER 5. FINDINGS

Food is power. Are you in control of yours? (John Jeavons, source unknown).

This chapter presents the findings of the qualitative analysis of the interviews and the content of related campaign publications and media coverage of the ordinances banning the propagation of GMOs in both Mendocino and Jackson Counties. The interviews conducted for this study sought responses from citizens, farmers, researchers, and political consultants who were personally and professionally involved in the campaigns supporting and opposing the ordinances. Questions were designed to elicit feedback about not only how and why respondents themselves engaged in the campaigns, but also about the processes by which the citizen-led campaigns were organized and the strategies and tactics of agenda-setting that were utilized to garner public support for the measures. Taken together, these responses reveal the primary motivations driving the local regulation of genetically engineered crops as conceptualized by a group of people who are intimately familiar with the ordinances and the process of their passage. While every effort was made to conduct interviews with informants on both sides of the issues, the response rate from individuals opposing the ordinances was much lower than those that supported the ordinances.

In order to preserve the anonymity of interview respondents, I have chosen to refer to them simply by the name of the county that they represent and the number that corresponds to the chronological order in which they were interviewed. Table 3, lists these respondent IDs, along with a one- to two-word description of each informant's 'role' in the community and their

position on the ordinance. Respondent roles are identified simply as either ‘citizen’, ‘business owner’, ‘farmer’, ‘researcher’, or ‘political consultant’ to prevent readers from attempting to deduce their individual identities. For this same reason, personal characteristics of informants such as age, gender, race, etc. have been intentionally excluded.

Table 3. Interview Respondents

Respondent ID	Role	Position
Mendocino 1	Citizen	Supported
Mendocino 2	Farmer	Supported
Mendocino 3	Citizen	Supported
Mendocino 4	Business Owner	Supported
Mendocino 5	Citizen	Supported
Mendocino 6	Business Owner	Supported
Mendocino 7	Citizen	Supported
Mendocino 8	Researcher	Neutral
Jackson 1	Farmer	Supported
Jackson 2	Farmer	Supported
Jackson 3	Political Consultant	Opposed
Jackson 4	Political Consultant	Opposed
Jackson 5	Farmer	Opposed

Once all of the interviews had been transcribed, the responses were coded and categorized using a constant comparative technique to group similar themes and ideas that emerged. The process began with a set of codes rooted in the theory and literature concerning civic agriculture. The transcribed interview responses were utilized to reshape these theory-driven motifs and to identify emergent themes. A constant comparison method allowed for categorized segments of text to be re-analyzed to ensure proper coding. Each code was then revisited to establish that the items within it effectively spoke to the same theme, to pull out particularly useful quotes, to search for missing data or information, and to identify relationships between themes and within themes. Next, the same coding categories and constant comparison

technique were applied to secondary sources; which consisted of letters to the editor, scholarly articles, other media coverage, campaign materials, and ballot statements in favor of the ordinances. This process allowed the key themes to emerge directly from the primary sources, before being triangulated by the analysis of the secondary sources.

Combined Case Study Findings

Several key themes emerged out of the data analysis process. These themes, along with the number and percentage of primary, secondary, and combined primary and sources that made reference to each theme are listed in Table 4. Tables 5 and 6 enumerate the same information for each of the individual case studies of Mendocino and Jackson Counties, respectively. Each of these themes is briefly described below:

“Bigger than the County”: Many sources expressed opinions that the ordinances would have impacts beyond the boundaries of the county. Some participants described the campaign as an effort to “start a revolution”. Others explained that the believed passage of the ordinance would set a precedent for other communities seeking to regulate GMOs at the local level. Still, others saw their work as “sending a message” to the American public by calling attention to the issue.

Corporate Intrusion: One of the most frequently occurring themes was concern over the perceived “corporate intrusion” on the part of the biotechnology industry. This theme consisted of two distinct, yet closely related elements: the perception of corporate intrusion into local political matters; and the anticipated ‘corporate takeover’ of the larger food and agricultural systems. Sources indicated resentment over what they conceived of as abuses of corporate power on the part of both the biotech companies themselves and the industry groups that represent these entities, and many sources expressed a distrust for corporations more generally. A number of

sources characterized the corporate involvement in local matters as a threat to civic democracy; and viewed the staggering amounts of corporate contributions to the campaigns against the measures as an attempt to subvert the rights of local citizens. This theme also encompasses producers' concerns over patent infringement lawsuits, as well as threats of litigation made by biotech corporations (which in the case of Mendocino County, materialized as a court case early in the campaign).

Educating Others: Several sources cited a desire to educate themselves and others in the community about the potential risks of GMOs as a primary motivation for becoming involved with the campaigns.

Environmental Health: Many sources expressed concerns over potential risks to environmental health posed by GMOs. These concerns include the cross-pollination of organic and non-GMO crops and native plants, as well as the application of pesticides used in the production of GMOs.

Human Health: Sources also expressed concerns over potential risks to human health. These concerns included the potential risks of consuming genetically modified food products and human exposure to pesticides.

Local Economy: Many sources indicated expectations that the ordinances would benefit the local economy by preserving locally embedded agricultural production and by allowing the county to market itself as a GMO-free region.

Locally Embedded Agriculture: The desire to preserve locally embedded agricultural production was a theme expressed by a majority of sources. This theme encompasses the threat that cross-pollination poses to organic and non-GMO farmers, as well as a desire to maintain the economic viability of agricultural production in local and international markets that increasingly demand

GMO-free products. Additionally, several sources indicated that GMOs did not embody the spirit or culture of farming within the community.

Personal Connections: This theme broadly encapsulates a number of different motivations. Some sources explained that they were initially drawn to the campaign because of long-standing personal ties to other supporters. Other sources felt that supporting the initiative provided an opportunity to solidify bonds of community. Several sources described the experience as ‘fun’, and shared anecdotes about new friendships that were born from their involvement in the efforts. Other sources indicated that they were attracted to the grassroots, person-to-person nature of the campaigns. Among sources that were farmers, there was an apparent desire to stand together in support of one another regardless of how each felt personally about GMOs.

Preserving Choice and Rights: This category encompasses a broad range of motivations expressed by sources, including concerns over personal rights, property rights, preserving local farmers’ ability to choose what type of crops they produce, to guarantee the purity of their produce without the threat of cross-pollination, and safeguarding farmers’ rights to save seeds from year to year. Other sources perceived their involvement as an important exercise of civic democracy and an opportunity to enact local regulations that embodied the values of their community.

Protecting the Food Supply: Many sources described a desire to the local food supply from the presence of GMOs and the pesticides that so often accompany them. Several sources expressed concerns over what they described as the “corporate takeover of the food supply”.

Scientific Uncertainty: Sources repeatedly voiced concerns over the lack of the scientific certainty surrounding biotechnology. Many sources saw the ordinances as a necessary

precautionary measure that would allow the community to regulate GMOs until the scientific community reached a consensus as to the safety of such genetically engineered crops.

Table 4. Emergent Themes of Combined Case Study Sources

Theme	Primary Sources		Secondary		Combined	
	No. of Source	Pct. of Source	No. of Source	Pct. of Source	No. of Source	Pct. of Source
"Bigger than the County"	5	38.5%	12	40.0%	17	39.5%
Corporate Intrusion	9	69.2%	27	90.0%	36	83.7%
Educating Others	8	61.5%	3	10.0%	11	25.6%
Environmental Health	5	38.5%	16	53.3%	21	48.8%
Human Health	7	53.8%	21	70.0%	28	65.1%
Local Economy	9	69.2%	21	70.0%	30	69.8%
Locally Embedded	5	38.5%	27	90.0%	32	74.4%
Personal Connections	8	61.5%	18	60.0%	26	60.5%
Preserving Choice and	6	46.2%	23	76.7%	29	67.4%
Protecting the Food Supply	6	46.2%	8	26.7%	14	32.6%
Scientific Uncertainty	7	53.8%	11	36.7%	18	41.9%
	n=13		n=30		n=43	

Table 5. Emergent Themes of Mendocino County Sources

Theme	Primary		Secondary		Total Sources	
	No. of Source	Pct. of Source	No. of Source	Pct. of Source	No. of Source	Pct. of Source
"Bigger than the County"	3	37.5%	7	58.3%	10	50.0%
Corporate Intrusion	6	75.0%	11	91.7%	17	85.0%
Educating Others	5	62.5%	3	25.0%	8	40.0%
Environmental Health	3	37.5%	8	66.7%	11	55.0%
Human Health	5	62.5%	11	91.7%	16	80.0%
Local Economy	5	62.5%	9	75.0%	14	70.0%
Locally Embedded	2	25.0%	11	91.7%	13	65.0%
Personal Connections	5	62.5%	7	58.3%	12	60.0%
Preserving Choice and	3	37.5%	8	66.7%	11	55.0%
Protecting the Food Supply	4	50.0%	3	25.0%	7	35.0%
Scientific Uncertainty	3	37.5%	9	75.0%	12	60.0%
	n=8		n=12		n=20	

Table 6. Emergent Themes of Jackson County Sources

Theme	Primary		Secondary		Total Sources	
	No. of Source	Pct. of Source	No. of Source	Pct. of Source	No. of Source	Pct. of Source
"Bigger than the County"	2	40.0%	5	27.8%	7	30.4%
Corporate Intrusion	3	60.0%	16	88.9%	19	82.6%
Educating Others	3	60.0%	0	0.0%	3	13.0%
Environmental Health	2	40.0%	8	44.4%	10	43.5%
Human Health	2	40.0%	10	55.6%	12	52.2%
Local Economy	4	80.0%	12	66.7%	16	69.6%
Locally Embedded	3	60.0%	16	88.9%	19	82.6%
Personal Connections	3	60.0%	11	61.1%	14	60.9%
Preserving Choice and	3	60.0%	15	83.3%	18	78.3%
Protecting the Food Supply	2	40.0%	5	27.8%	7	30.4%
Scientific Uncertainty	4	80.0%	2	11.1%	6	26.1%

n=5

n=18

n=23

Many of these themes are overlapping, for example preserving locally embedded agriculture is intimately linked to the local economies of each county; concerns over corporate intrusion often include a desire to protect local choice and rights; and surely uncertainty over biotechnology relates to human and environmental health, a desire to protect the food supply, and preserve locally embedded agriculture. The dominant motivation indicated by more than 80% of sources was concern over Corporate Intrusion; followed by preserving Locally Embedded Agriculture, as indicated by nearly 75% of sources; and nearly 70% of sources described concerns over Local Economy as a motivating factor. These three themes are highlighted because of they were referenced most frequently by the case studies in combination, but also because they were the three most frequently cited themes in each respective county case study. While preserving Choice/Rights was indicated by approximately 68% of sources in both counties and was a prominent theme in Jackson County, it was not as prominent in Mendocino County and is thus not considered an overarching theme.

The following two sections discuss the dominant themes within the context of each case study, beginning with Mendocino County. Within each section, the themes are ordered in

accordance with the frequency with which they were mentioned by sources. In the tradition of qualitative research, I have included as many quotes as possible to allow the data to speak for itself. This encourages the reader to analyze the data with me and to draw their own conclusions as necessary. All quotes appearing without full citations have been taken directly from transcribed interview responses.

Mendocino County Findings

Corporate Intrusion

Concerns over corporate intrusion were mentioned by 85% of Mendocino County sources. One interview informant described the tactics employed by the corporations funding the opposition as misleading:

There was no question that—and I think that every GMO labeling that I’ve looked at since Measure H—the public starts out being negative on GMO food, on GMO crops, on GMO animals and all of it. The public is generally negative for good reasons, and the only way these things have been beaten back is by false information, scare tactics, and confusion. And, that’s what was tried in our county; those were the tactics used in our county against us (Mendocino 7).

Several interview respondents mentioned that the lawsuit brought by CropLife America early in the campaign helped to garner support for the ordinance, as evidenced in the following quotes:

So, this generated a lot of publicity—the court battle, the hearing on the ordinance—was the day before Christmas Eve, and that must have been 2002. And I think over 150 people showed up in the courtroom in support of the ordinance (Mendocino 5).

They set up a dummy interest group that included Monsanto and Syngenta and DuPont and all the big GMO companies, because we were the first county to do this; so they wanted to stop it in the tracks. So they funded this group that was opposing us with \$600,000—around that anyway—so, I think that backfired because the people of the county don’t like that kind of outside interference in their affairs—people are very independent here (Mendocino 1).

Sources suggested that the massive contributions that the Citizens Against Measure H received from biotechnology corporations also helped gain public support for the initiative.

Another thing that really got peoples' attention was—in California you have to file financial reports on your campaign—so we would file these financial reports that showed that we were operating on, you know, practically no money at all. And their campaign reports would show that they were operating on bajillions of dollars; and that angered people. You know here's an example of a big corporation—big corporations—coming in and trying to rule the county. We don't like that! And I think that helped—A LOT (Mendocino 5).

They [the campaign against Measure H] did radio 24-7; every radio station in the county. There were also lots of print ads and mailers and so forth. But they didn't use television and that I think helped us get our message out. We had a people campaign as you know, a lot of people on the street, meeting and greeting their neighbors, everywhere, mainly in front of the food markets. We were everywhere we could be to meet people, and that made a difference, a huge difference (Mendocino 7).

Interview respondents alleged that tactics used by biotechnology firms in opposition to the ordinance tapped into already existing anti-corporate sentiment within the community.

I think it's safe to say that we've had kind of a long struggle with corporations in this county, coming in and you know treating us as sort of a comedy. And I think we saw this—some of us saw this—as one more case where corporations were coming in and attempting to push something off, and the people didn't really like that. And I think that particularly people didn't like the deception that was going on to promote GMOs (Mendocino 6).

When asked to elaborate on the 'long struggle with corporations in the county', the informant, Mendocino 6, explained:

Well, the biggest one that I'd been involved in—and probably the biggest one in our county—had to do with our forest lands, which were privately owned. Well, there's some forest service land, but most of it is private timber land. They just kind of devastated our forests—course they always say they are doing sustainable forestry—but then they get it all cut and they leave. You know, even the loggers have seen that—said, "Oh, yeah we could see that we wouldn't have jobs in 10 years. And they didn't (Mendocino 6).

Mendocino 6 went on to suggest that Jackson County's Measure 15-119 might be drawing on similar locally held resentments towards corporate interests from outside the community.

And I suspect that is some of the same thing in Jackson County. Yeah, see that's all logging country too. They see what's happening to the forest, and the loggers say, 'Oh, we're cutting too much.' So that's been the big thing; the big timber corporations, you know, they cut and run some of 'em are still here. But people still have that resentment (Mendocino 6).

Other key informants echoed this idea that distrust of corporations was a motivation for many Measure H supporters.

Another motivating factor, at least in particular to the culture of our county here, was the anti-corporate sentiment, the wish to prevent further concentration of power over our food by the food agricultural and industrial giants such as Monsanto and Bayer and so on. Those also became increasingly apparent as the funding poured in as it did in against California labeling initiatives. As the money poured in from the corporate sector against our initiative, I think that resistance motivation grew (Mendocino 6).

But in the county I think they've seen what corporations have done there, but they also see what corporations have done in the rest of the world. I mean we have a program on one of the local radio stations—Corporations and Democracy—talking about all the things that they are doing (Mendocino 6).

We would see little notes when people sent in money. Comments like, 'Good for you guys sticking it to the corporations'. And, I mean these were coming from the contractors. And I could sort of see some of the sentiment of some of the voters, but I think that motivated some of the organizers too (Mendocino 6).

I think a lot of people were nervous to be—they weren't nervous to be in support of Measure H; they were nervous to be against it. Because, again—even at that time—it became sort of the big agrichemical companies vs. the little guy (Mendocino 8).

The GMO Free Mendocino campaign brought in speakers who were victims of abuses of corporate power on the part of biotech companies; including microbial ecologist, Ignacio Chapela. Chapela's very public criticism of the close ties between corporate agribusiness and the University of California system, nearly cost him his tenure at UC Berkeley. Interview respondents explained that his narrative resonated with citizens.

We had a professor, Ignacio Chapela, who came up a couple of times and was on panels and part of debates, and he is such a real person, unlike what one might expect from an academic. People related to him very well and of course, his story. And, his experience at Berkley was also compelling (Mendocino 3).

Another speaker whose experience is credited as having a motivational impact on Mendocino County residents was Canadian farmer, Percy Schmeiser, who famously sued Monsanto after his fields were canola fields were cross-contaminated by their 'Roundup Ready Canola' plants.

And then we also were lucky to have kind of a 'roadshow' with Percy Schmeiser, who was an emotional lightning rod, if you will. That mobilized a lot of affections of people; as it was a real farmer telling a real story. He not only did some individual appearances, but he was also part of a debate or two—where he and two or three others would appear on a panel—and he was really very well received because he was such a down to earth guy telling his story and it made for a lot of good connections with people, you know, kind of a gut level. It resonated with his story, a kind of David and Goliath (Mendocino 3).

People thought he was wonderful! He's a very personable guy, and his wife is also very personable (Mendocino 5).

Respondents indicated that many residents regarded the corporate opposition to the measure as an unwelcome interference from outside the county, which was viewed as an attempt to subvert local democracy.

I mean, it was an unbelievable onslaught of outside interests coming into the county. It was a conglomerate of biotech and big ag interests, as well as the California Farm Bureau... They spent over \$800,000, which, when you figure there is only 82,000 people that live in the whole county, it was pretty amazing—the level of spending that was going on.” But because we have this pretty progressive voting population and people started resenting—there was definitely a mood of ‘Corporations can't push us around!’ that came through as the campaign matured—that people were reacting to that as much as to the issue even (Mendocino 2).

Our radio ads were aimed primarily at exposing the external corporate opposition to the campaign. So, I would say that that was both informational and certainly emotional, appealing to the emotions because we felt we had a pretty strong confidence of the people once they knew would say, ‘Hell no!’ and they did (Mendocino 3).

The anti-corporate sentiment motivated citizens to support the measure and also fostered a sense of empowerment. One campaign organizer made the following observation to a local reporter:

People feel so unempowered in the world, and this is something they can do on their own and make their own issue. That's helping us (Els Cooperrider, qtd. In. Due, 2004, para.9).

The campaign in favor of Measure H used the corporate power element to embolden residents to exercise their veto on Election Day. As one GMO Free Mendocino campaign press release explains:

Monsanto just goes along putting more GMO's on the market. But they can be stopped if we have laws in our counties that forbid the planting of GMO's. We're saying 'not in our backyard, not in our county (Els Cooperrider, qtd. In. Mendocino Organic Network, para. 11).

Interview respondents suggested that supporters were at least partially motivated by a desire to protect the local food supply and send a message to biotech corporations.

So yeah, we know why; they want to control the food supply. They want to intentionally contaminate. It was clear, even back then in 2003, that that was their intention. That was going to be their strategy; intentional contamination of the non-GMO seed stock. So you couldn't grow a non-GMO food and they would win. So this is a great push back in Jackson County and hopefully we will see more (Mendocino 7).

So, meanwhile Monsanto and the bad guys, as I will call them, they started realizing, scratching their heads and saying, ‘Oh my g-d, these hippies out there are actually pulling this off; we better do something!’ (Mendocino 5).

Other respondents indicated that they were motivated to set a precedent for other communities by passing Measure H in Mendocino. The following quote speaks to campaign members’ perception that they were starting something that would eventually become a much larger movement:

The last phase, which was shorter, was the follow-up to the campaign in which we actually organized a whole day gathering of say 25 or 30 people from different counties who wanted to do something similar. For that we put together a notebook and a well-organized day long agenda. We wanted to give people resources and ideas for how to proceed themselves. The fact of our campaign, on the one hand, and the approach of it, I think on the other, definitely influenced initiatives in other counties over the next couple of years. I guess you could say it contributed to the success of those that passed; but it was also an inspirational and informative element in those that failed. Because, you know, more failed than succeeded. It is very interesting to me that ten years later there is this apparent, what’s the word I’m looking for? Rise again of interest in initiatives (Mendocino 3).

Human Health

Approximately 80% of Mendocino County sources expressed concerns over the potential human health risks associated with genetically engineering. In fact one of the GMO Mendocino campaign’s slogans was ‘It’s good for our health’. As mentioned in Chapter Four, the measure was widely supported by members of the medical community. Interview respondents appeared to be motivated by a desire to protect human (and environmental) health.

I think that most of the concern was about the effect of genetically modified plants on human health and also on the environment (Mendocino 1).

Well, we were motivated by the potential effect of genetically engineered crops on human health and on the food supply for humans and animals and for the negative effect on the environment as a whole (Mendocino 7).

Another respondent identified a desire for healthy food as a motivating factor:

I’ve always been interested in healthy food and I thought that this would apply to getting healthier food (Mendocino 5).

The bulk of human health concerns identified by interview respondents relates to the lack of scientific consensus regarding the safety of GMO foods.

At that time, people didn't know anything really about genetically engineered crops. They didn't know if they were safe; they didn't know (Mendocino 8).

Well, I think to the general problem was the lack of awareness of what GMOs really were and how they affect their lives (Mendocino 6).

The unknown consequences of something totally foreign and manmade that we have never encountered before, and the people were worried we were being used as guinea pigs in a corporate project to make more money (Mendocino 4).

I was so shocked by the GMO developments, the potential impact, at that time, and I am sure still there is talk about not only Round Up and DDT and all those kind of crops, but there was also talk about horizontal gene transfer and other stuff... I couldn't imagine that there wouldn't be some health implications just based on what my training told me (Mendocino 7).

Other sources pointed to concerns over the perceived inadequacy of federal safety regulations and future threats to the food system.

This stuff had the potential to be very dangerous, and people were not paying attention to—particularly the people that were regulating—were not paying attention to the dangers of it (Mendocino 1).

I think it's scary as hell that there are no laws on the books to say that we have to list whether we are using GMO ingredients or whether it's natural (Paul Dolan, qtd. In. Somers, 2004, para.66). Because they [Biotech corporations] want to control contamination, they want to control the food supply and as you well know, there are GMO vegetables coming down the pike. There is already sweet corn and zucchini and crookneck, and maybe others. So if you go out to eat, and it's not organic, then it could be GMO (Mendocino 7).

Arguments in Favor of Measure H appearing on the Mendocino County Ballot Statement include the following:

The FDA, EPA and USDA do not adequately regulate genetically engineered food crops. The products do not undergo thorough pre-market safety testing or subsequent labeling. Therefore, the safety of human health and the environment cannot be assured. Research associations and governmental organizations, international and national, (including the British Medical Association and the National Academy of Sciences) believe more research should be conducted on the possible toxicity and allergenicity of GMOs (GMO Free Mendocino, 2004 para. 25)

Other sources mentioned the dangerous chemicals and pesticides that have been produced by the purveyors of GMOs.

These are the same corporations that brought us Agent Orange, PCBs, and are the largest producers of genetically altered food and seeds in the world (Laura Hamburg, qtd. In. Yes on Measure H press release, 2004 para. 3).

Who is CropLife America? It is the front organization for Monsanto and other petrochemical and bio-pharmaceutical multinational corporations who support, among other things, using human subjects, including children, to test pesticides (Ron Epstein, qtd. In. Yes on Measure H press release, 2004 para. 9).

This was a dangerous technology that and especially when you saw the first crops that came down the pike were Roundup Ready corn and soy... In some ways Roundup is even more diabolical and dangerous to health and to the environment than even GMO crops... The fact that Monsanto started up with all these Roundup Ready crops in order to boost their sales of Roundup and increase the use of Roundup—and you should research the effects of Roundup, because Roundup has as many agricultural downsides—that’s human health and animal health downsides—as the effects of the GMOs (Mendocino 7).

Local Economy

Expected benefits to the local economy were identified as a motivating factor by 70% of Mendocino County sources. One Measure H supporter explained to a news reporter:

The decision to ban [the growing of] GMOs in our County will put us on the world map as a place where our representatives are responsible, prudent, wise and truly care for the people (Hubert Germain-Robin, qtd. In. GMO Free Mendocino, 2003, para. 14).

Interview respondents shared in this opinion that the local economy, particularly the wine industry, would benefit from passage of Measure H.

People got behind GMO Free Mendocino because it was economically beneficial to the county. It was socially beneficial; it protected the natural features of the that everybody valued, and all we needed to do was to convince people that that was the case (Mendocino 7).

We realized that this would be a job creator—as we now say—because we could have our agriculture as unique (Mendocino 5).

We realized that if we could preserve Mendocino County as a GMO-free area that it would attract—or be great for the wine industry because they could say that their wines were GMO-free (Mendocino 5).

We tried to emphasize that the ban would be good for the County economically, it would be good for businesses, in addition to being good for the environment, and in addition to being good for the health concerns (Mendocino 1).

Another respondent alluded to the potentially damaging effects that GMOs might have on the forests, which are also vital to the county's economy:

That was another issue that made my heart sick; when I realized they were going to apply this to genetically engineered trees. And trees are long-lived, and we are so dependent on trees, and once I understood the mechanisms for these genes—insertion and alien gene insertion—it was clear that these genes would not stay put in the organisms that they were purposefully inserted into—that they would move around and leave and go elsewhere to other species, and, of course, that's what happened in Iowa. You have the super weed issue and these genes are moving around and to have that happened in tree species would—especially the kind of genes they were talking about; low-lignin genes—and trees need lignin in order to stand up straight (Mendocino 7).

Clearly these motivations are closely linked to the theme locally embedded agricultural production.

Locally Embedded Agriculture

The desire to preserve locally embedded agriculture production was a theme expressed by 65% of Mendocino County sources. Interview respondents contended that the ordinance would benefit local producers and consumers alike.

Why should biotech corporations control our local food supply? As just one example, farmers using genetically modified seeds are forbidden to save those seeds for the following year, even though they grew them. Instead, they must buy new seed- or risk arrest. It's outrageous (Els Cooperrider, qtd. In. Mendocino Organic Network Press Release, 2003, para.4).

This was just going to be more of the same, but more on a grand scale and the magnitude and speed that the farmers in your region [Iowa] and elsewhere in the Midwest adopted the GMO crops really made the issue clearly, in my mind, a crisis that needed to be dealt with. And the easiest thing to do was to try and protect the home front, which was what Measure H was all about (Mendocino 7).

You know, this ordinance almost sold itself, because it was such a great boost to local agriculture (Mendocino 5).

Our county is free of GMOs, and we like it this way and we want to keep it this way (Mendocino 4).

We agreed that we needed to do something to forestall any GMO crops coming through our county. Now our county is not a major ag county, except the main crops are marijuana and winegrapes and a few other things. So I guess those were my motivations (Mendocino 7).

The GMO Free Mendocino campaign deliberately avoided the use of terms like ‘organic’ and ‘conventional’, so as not to polarize local producers. The popularity of organic farming within the county was also cited as a motivation by interview respondents.

It was just something that grabbed the public’s imagination because it was protecting our local agriculture—we have a whole lot of organic farmers here—and it was a way of—well, I think mostly protecting local agriculture was seen as very significant (Mendocino 5).

The text of the ordinance contains the following finding, regarding the cross-pollination of non-GMO crops:

The people of Mendocino County wish to protect the county’s agriculture, environment, economy, and private property from genetic pollution by genetically modified organisms (Prohibition of the Propagation, Cultivation, and Growing of Genetically Modified Organisms in Mendocino County ordinance [2004]).

Sources indicated that local producers were motivated to support the ordinance out of concerns over the potential for cross-pollination. If non-GMO crops became contaminated by genetically engineered material, organic producers could lose organic certification, and even non-organic producers risk losing out on markets.

That Percy Schmeiser situation really spoke to what the potential impact on non-GMO agriculture, and how contamination would make it increasingly difficult for non-GMO farmers and organic farmers to grow their crops and keep them free of GMO contamination (Mendocino 7).

Genetically Modified Organisms (GMOs) threaten county agriculture and commerce in several ways. First, Pollen and seed from GMOs travel great distances, contaminating non-GMO crops. Second, wind- and insect-borne GMO pollen can cross-pollinate with commercial and native grapevines, threatening the economic viability of organic and conventional wineries. Third, GMO- polluted wine is unmarketable in Europe and Japan. Fourth, Mendocino County has 150 organic farmers and wineries; if organic crops become contaminated by GMOs, the organic farmers and wineries will lose organic certification and their products will not be marketable as organic. Over one-third of Mendocino County’s winegrapes are organic and are an important source of county revenue. Fifth, banning GMO crops will make Mendocino crops attractive in markets where there is a demand for food that is organic and pure (GMO Free Mendocino, 2004, para. 1).

The ordinance received support from several local organic and biodynamic wineries.

We had the Frey people behind us, and other wineries behind us. The Freys and the Barra industry—Barra wines, and others. Because they wanted to be able to say that their wines were grown in a GMO-free area and weren’t contaminated (Mendocino 2) .

Well, I think that a lot of us were more knowledgeable about what GMOs were and what the risks were, and what the dangers were, in a lot of different arenas. You know; certainly healthwise; but also environmental issues of contamination, and that sort of apparent irreversibility of contamination once it gets into the gene pool (Mendocino 6).

One local organic wine producer explained that even though GMO winegrapes had not yet been made commercially available, the measure would ensure the future security of Mendocino County's winegrape production.

We were responding to the realization that genetic engineering wasn't going to be just a fringe, occasional experiment in agriculture; but we could see the handwriting on the wall that it was going to be spread as widely as possible by its proponents throughout U.S. agriculture and specifically for me as an organic farmer, I instantly resonated with the idea of drift and the potential for contamination and I had been following the story of Percy Schmeiser and his canola problems up in Canada. So I was already well-versed in that. It wasn't a perceived problem within my own business' wedge of agriculture because there were no genetically engineered grapevines being introduced yet. So my motivation had to do more with long-term consequences and questions and concerns for both organic and conventional farmers over contamination (Mendocino 2).

Another respondent described the perceived threat that chemical herbicides might pose to area winegrape producers:

When Roundup Ready grains are fed to animals, it ends up in the animals and the meat; and so you have this cation chelator that is sucking up all the critical metals that you need in your enzymes to have a life, and it doesn't go away necessarily that quickly. Especially from the farmlands, so a steady diet of Roundup Ready meat and vegetables and fruit, ends up in non-organic wine and ends up in wine. It is an incredible diabolical chemical to be married up to all the negative impacts of the GMO's. It's like this could not be worse. And that is mostly what's out there (Mendocino 7).

The next section explores the dominant themes concerning the motivations of supporters of Measure 15-119 in Jackson County.

Jackson County Findings

Locally Embedded Agriculture

The desire to preserve locally embedded agriculture production was a theme expressed by 83% of Jackson County sources. This theme was mentioned repeatedly in the Findings section of the text of the ordinance, and by a majority of sources. Interview respondents explained that GMOs were simply not compatible with Jackson County's traditional agricultural practices.

So anyhow, we kind of got consensus that it was necessary to move these things out because it was not in the spirit of the Rogue Valley. I should say in the spirit of farming in the Rogue Valley. And, we don't want any of this. We live in an area that is known for its high-quality foods, high-quality wines and cheeses, and stuff like that. This is not what's up in Rogue Valley. It was pretty clear that it would compromise the integrity; it would directly threaten the existence of the economy of the Valley around the food and agricultural economy (Jackson 2).

We are really small farms in general; our farm is 113 acres, but in general, we are not a big ag business on this land. It used to be a lot of dairy farms. You know; we're not like the Willamette Valley or something. We do a lot of seed production here, which doesn't take as much land to make good money (Jackson 1).

The case of the Rogue Valley/Jackson County is that it's a little different than the Midwest. So, there is a lot of diversification and smaller plots and stuff like that. Who are growing on those smaller plots? Those are the family farms across the area. So, when you have a multi-national chemical company setting up shop and doing their projects in your backyard literally on a ¼ of an acre the size of a city tax lot, that just not the flavor of the Rogue Valley, we should not have to, you know; what is at stake here? The small family farms across the Rogue Valley, you know it's just not soybeans and corn and canola and sugar beets. It's Swiss chard; it's like organic and non-GMO. GMO stuff is like for the big dogs, you know; like commodities like you ship all across the planet. That's where the GMO stuff is (Jackson 2).

This is not considered responsible farming techniques; and that's what people voted for (Jackson 1).

Some sources indicated concern over the spread of herbicide-resistant 'superweeds' that have been linked to GMOs.

Genetically engineered crops are creating "superweeds" that resist common herbicides. Tough-to-control superweeds damage crops, increase control costs and require use of more expensive and higher-risk herbicides (Jackson County Voters Pamphlet, 2014, p.15-8).

As a rancher who operates a 440-acre ranch, my business and that of many others are directly put at risk by “Superweeds” that develop herbicide resistance due to the high use of herbicides on genetically engineered crops (Jackson County Voters Pamphlet, 2014, p.15-11).

By far, the most commonly cited motivation within this theme was the desire to prevent the cross-pollination of non-GMO crops. As mentioned by one interview respondent, GMOs were being grown on small lots scattered among the non-GMO producers throughout the county. This configuration makes it nearly impossible to avoid pollen that can travel for miles.

The perceived problem was the high likelihood, the inevitability of likelihood, no; the inevitability of contamination of family farms across the county. That’s pretty much it, you know; that these guys are producing seed crops so that would be an eminent threat to a farmer’s ability to keep their farms safe from the threat of potential contamination of pollen patented by these chemical companies (Jackson 2).

They were responding to a problem that they perceived to be cross-pollination for organic seed that they were growing and it was in close proximity of fields that were growing GMO sugar beet seeds. They were afraid of contaminating their seeds due to cross-pollination (Jackson 3).

This sentiment was echoed by many of the arguments in favor of the ordinance that appeared in the Jackson County Voters’ Pamphlet, including the following published quotations:

Genetically engineered crops present a serious threat to Southern Oregon seed farmers because pollen and seed from genetically engineered crops easily spread by wind and other forces and contaminate seed crops that are not genetically engineered. This makes the contaminated seed crop unsellable since that seed becomes a patented product that the farmer cannot legally sell (Jackson County Voters Pamphlet, 2014, p.15-5).

While conventional and organic agriculture have co-existed for decades, there is no realistic way that genetically engineered crops can co-exist with traditional agriculture. Seed and pollen from genetically engineered crops can contaminate a farmer’s field in one windy afternoon and destroy a season of hard work (Jackson County Voters Pamphlet, 2014, p.15-8).

Many of our farms have already had to plow under and destroy thousands of dollars worth of seed crops because genetically engineered crops were planted near our farms. The claim that genetically engineered crops can “co-exist” with traditional crops may sound good, but it is a political fiction that just isn’t true (Jackson County Voters Pamphlet, 2014, p.15-6).

Sources emphasized that cross-pollination affects all non-GMO farmers, both conventional and organic.

Measure 15-119 is not about organic vs. traditional/conventional; it's about ridding Jackson County of genetically engineered growing systems, primarily grown here by Syngenta a Swiss Chemical Corporation banned from their systems in Switzerland, in 65 other countries worldwide and in some U.S. Counties (Faryl, 2014, para. 1).

'People say it's just a bunch of hippie organic farmers, but it's not,' said Jared Watters, who describes himself as conservative and grows more than 1,000 acres of alfalfa and other crops in the Medford- White City area. 'We're conventional farmers' (Associated Press, 2014, para. 7).

Another motivation for both conventional and organic growers alike was the concern that contamination could prevent them from saving the seed from their crops to use the next season, or that it might prevent seed producing farmer from selling their seeds.

They didn't really realize the impact that it had on the local family farmers being able to collect their seed and use it for the next year because once the contamination of cross-pollination happens because the federal patent laws were no longer able to sell our seed and it is then, when we grow it out the following year we are growing out a genetically engineered plant. And that was the breaking federal patent law, just that alone, and to top it off you know; the market just really doesn't want genetically engineered crops, not only locally, but internationally. That is really losing a lot of money for local family farmers not growing GE crops (Jackson 1).

Genetically engineered sugar beets are grown literally right across the road from our farm. If pollen from those beets contaminates a beet or chard seed crop we are growing then we cannot sell it (Jackson County Voters Pamphlet, 2014, p.15-10).

Corporate Intrusion

Concern over perceived corporate intrusion was a motivating factor mentioned by 83% of Jackson County sources. The campaign to oppose Measure 15-119 was receiving large sums of money from corporate agribusiness firms and trade associations from outside of the county, and oftentimes even outside of Oregon. Similar to the case of Measure H in Mendocino County, sources indicated that citizens of Jackson County responded negatively to the corporate interference from outside of the community.

Once we realized Syngenta was growing here, people really saw that because it was at a local level. We are the farmers that people are buying their food from. Obviously they are going to—they know us—and they have a relationship with us. You know; they trust us, and they know we are not making it up vs. huge out-of-state, money coming in, talking the opposite argument. People really saw through that... There's less than a handful of farmers, individual farmers, that actually grow genetically engineered crops versus hundreds that don't grow genetically engineered crops in our valley... I think that was pretty apparent by the money that came in 97% of almost a million dollars came from outside the county (Jackson 1).

And the reality is that this is my food supply, and it is our farmers' livelihoods and seeing all the money coming in from Monsanto—it's like they are trying to buy out our food supply (Jackson 2).

They [Syngenta] are not altruistic, even though they attempt to tell the world of their good deeds and good intentions. Their motive is financial and they, along with other chemical companies, have already gained a substantial monopoly on American and world seed sources, while using trans-species engineering to make seeds that only they own and control under patent rights (Faryl, 2014, para. 2).

We're at a fork in the road. We either have to choose multinational corporations as the future of agriculture or we have to show up in May and choose Measure 15-119 as the future of agriculture in the region. They are non-compatible (Chris Hardy, qtd. In. Rosenfeld, 2014, para 10).

We're at risk too. I mean, Syngenta, they are already threatening to come and sue you know; we'll see. I guess that's just their MO [Modus operandi] to go around bullying people (Jackson 1).

Sources expressed concerns over the tactics employed by agribusiness corporations within the county. One interview respondent indicated that companies like Syngenta were exploiting farmers:

There are local people that have lived here forever who really don't have the mojo or the expertise to get out and do anything with their land anymore, they're retired, they are 60 or 70 or 80 years old and are like, 'Oh yeah, sure, we'll lease the land to you.' They put \$500 in their pocket and Syngenta destroys their land (Jackson 2).

Several sources said that they were offended when, after months of negotiating a plan for coexistence with the Southern Oregon Seed Growers Association (SOSGA), Syngenta's officials abruptly terminated the process.

Towards the very end of the process, they sent an attorney from Texas who showed up and said, 'This Seed Association does not work with Syngenta business model, and we will no longer be a part of this process.' So they walked out of a process that brought nearly 50 farmers together in Jackson County, Southern Oregon. They walked out of that process citing that the Seed Association would not work with their business model. So everything that we heard up in Salem all the way, about co-existence, about calling up your neighbor farmer, calling up Monsanto, calling up Syngenta, saying, 'Hey, what are you doing over there? Are you growing GMO's? Hey, can we work this out? You want to plant early, we'll plant late...'; all that stuff. Syngenta walked out of that process... Like if there ever was a co-existence plan that would ever work, it was that. Here is where GMO's are planted on this map and then down the street 4 miles away is an organic chart field. How hard is it? And then, they walked out of that process (Jackson 2).

Them [Syngenta] leaving was really shocking because they represented themselves as wanting to be part of the community, to be good neighbors (Steven Fry, qtd. In. Wilson, 2013, para. 24).

Unfortunately, multi-billion dollar corporations that patent genetically engineered seed are not being good neighbors in the Rogue Valley (Jackson County Voters Pamphlet, 2014, p.15-12).

Other sources indicated that they were motivated to set a precedent for other communities by passing Measure 15-119 in Jackson County. One campaign organizer explained the group supported a similar effort in neighboring Josephine County;

Our family farmers coalition has generally been the work of a group of farmers from both [Jackson and Josephine] Counties, and our main goal was to get the measure passed in Jackson County because we felt like that was how we would have a leg to stand on. But we were obviously super supporters of any farmer who wanted to get genetically engineered crops out of the county to protect their farms (Jackson 1).

One interview respondent summed up their impressions of the campaign's outcome with a single sentence:

What we've done is essentially signed a death warrant to these Chemical Companies (Jackson 2).

Choice/Rights

Approximately 78% of Jackson County sources indicated that they were motivated to support the ordinance in order to preserve the choice and rights of local agricultural producers.

The very first [campaign] meeting, we said these guys have no right to do this. No right to contaminate our farmers; they have no right to grow them out the back of the elementary schools, using these chemicals and so forth (Jackson 2).

The driving force was more the economic and property rights violation of genetically engineered crops had on family farms (Jackson 1).

The notion of preserving producer choice and rights primarily was primarily centered on the issue of cross-pollination.

No farmer should have to worry that his crop planted on his own private property will be contaminated and destroyed due to wind drift of pollen or seed from a genetically engineered crop planted down the road. Every farmer should have the freedom to plant, raise and sell a crop that is not genetically engineered (Jackson County Voters Pamphlet, 2014, p.15-9).

The reality that I have a farm, and when I have a plot like I do—a Syngenta sugar beet plot right down the road from me—I know I lost my right to be able to save and collect my seed from any fee for charge and because it is contaminated with GE pollen and looking at those facts, my rights have been taken away from me because the junk that the Syngenta chemical company was not allowed to grow in their own country is down the road from me leasing land (Jackson 1).

This motivation apparently crossed political boundaries and received bi-partisan support in the county. One campaign organizer explained:

One of the farmers that came on our campaign is actually a current GMO grower and he had his whole entire wheat crop lost last year because of contamination threats here in Oregon. So he lost that crop, and then this measure came up, and he realized the impact on other farmers and taking their rights away. He is a stout Republican and believing in property rights. He came on and actually became one of our spokespeople farmers for the campaign (Jackson 1).

The same respondent suggested that by passing the ordinance, the county was sending a message to Oregon lawmakers that citizens did not support the passage of Oregon's seed preemption legislation, which they perceived as a violation of farmers' rights.

I think it was that the people have really spoken up for what they want and to take the rights away on the level was just unjust to not to allow farmers to protect their crops on a local level where they really can make a difference, which is probably why he [Governor Kitzhaber] took it away from them (Jackson 1).

Other sources indicated that supporters were motivated to pass the ordinance to protect themselves from the perceived threat of patent infringement lawsuits.

In a narrow valley like ours, genetically engineered crops put farmers at risk of being threatened with federal patent lawsuits by multi-national corporations like Monsanto and Syngenta. Across the country, many innocent farmers have been threatened with these lawsuits after genetically engineered seed and pollen blew onto their farms. This just isn't right (Jackson County Voters Pamphlet, 2014, p.15-8).

[Measure 15-119] protects private property from trespass by genetically engineered pollen or seed that can drift for miles in the wind, with no respect for property lines. This pollen drift can make traditional crops unsellable and exposes farmers to threats of patent infringement lawsuits (Jackson County Voters Pamphlet, 2014, p.15-6).

Another argument repeatedly expressed by the campaign to oppose the ordinance was that farmers should have the right to choose to grow to GMOs. One respondent indicated that while supporters agreed that farmers should have the right to decide what kind of crops they grew, the inability to effectively prevent cross-contamination violated the rights of farmers who preferred to produce non-GMO crops:

A lot of the argument was, 'Hey we agree with you that people should be able to do what they want on their own property, but when it trespasses onto somebody else's property and ruins their

crop, that is unacceptable.’ You know; if your GE pollens stayed on your fields, then we wouldn’t be in this conversation right now (Jackson 1).

Another interview respondent echoed this sentiment and explained that the ordinance would affect only a very small minority of farmers in the county that were producing GMOs:

It was very clear that this was just—by continuing to produce this technology in our county—we were inherently limiting all those who did not want that technology. So, as far eliminating farmers rights, that was readily rebutted with the fact that we’re not going to give preference to the GMO farmers because they are going to contaminate and pollute every farmer down the street, or we take GMO out of the picture and, who’s growing it, who is it going to impact? Come to find out, two of the hundreds of farmers that I have spoken to across the Valley that are growing any GMO at all and so who is it going to impact? Virtually no one (Jackson 2).

Local Economy

The desire to protect the local economy was a motivation expressed by 70% of Jackson County sources. The following quotes emphasize the importance of the agricultural sector to the County’s overall economy:

Our family farmers are a key part of our economy and are counting on us. No one in Washington, DC or Salem is going to protect us from the threats of genetically engineered crops (Jackson County Voters Pamphlet, 2014, p.15-6).

Genetically engineered crops pose a real risk to the future of family farming in the Rogue Valley. Measure 15- 119 is how Jackson County can protect our farms, our farmers and our local economy. This measure should unify everyone in our county that values family farms and their important role in our community (Jackson County Voters Pamphlet, 2014, p.15-12).

The real practical economic side of how it impacted the farmers here locally and family farms was really, I think, what everybody agreed on, all partisans, Republican, Democrat, Libertarian; we had people involved in the campaign and registered to vote had never registered in their adult life to vote (Jackson 1).

Other sources suggested that the ordinance would not just preserve the local economy but that it would increase the value of local production.

This vote is going to make Jackson and Josephine county one of the most valuable seed-growing regions in the entire country, period (Chuck Burr, qtd. In. Dubois, 2014, para. 12).

The next and final chapter of this thesis further discusses and summarizes the findings and conclusions of the research, describes the implications, and provides recommendations for future and research.

CHAPTER 6. DISCUSSION AND CONCLUSIONS

In the first place, a civic agriculture of this sort needs vital bodies and a patchwork of voices. When our only voice is through the marketplace, it is a very poor voice at best. When we connect principally as producers and consumers, we are still living off the land and not in it, off nature and off each other. In the second place, inhabitation takes time – there is no “instant-comida” or “instant soil,” like there is an “instant-cup-of-soup.” We would do well to find it, honor it, study it, and protect it where it has already begun to grow. For therein lie the understandings that will protect us all in return –farmers, eaters, urban and rural dwellers, the land, and its diverse biological communities. There too, it seems to me, resides the spirit and energy – as well as half the purpose – of the project of civic agriculture (DeLind, 2002, p.223).

The findings of this study demonstrate the complexity of the motivations that lead citizens to pursue and enact local land use ordinances regulating genetically modified organisms. The predominant themes that emerged from the qualitative analysis of primary and secondary sources’ responses indicate that campaign supporters not only were motivated by a variety of factors; but also that they were acting upon strongly held values and beliefs concerning the GMOs and corporate agribusiness, as well as the connections between people, land, and food. In each county, sources indicated that they were primarily responding to concerns over corporate intrusion, a desire to preserve locally embedded agricultural production, and a need to protect local economic interests. However, the order magnitude of each of these emergent themes was varied, as were the specific concerns or ‘sub-themes’ encompassed by the broader thematic categories. Additionally, sources indicated other themes that were of primary importance to supporters in each individual county. In Mendocino County, Corporate Intrusion was the dominant theme, followed by Human Health, Local Economy, and Preserving Locally Embedded Agriculture. In Jackson County, Preserving Locally Embedded Agriculture and Corporate Intrusion were equally identified as the dominant themes, followed by Choice/Rights, and Local Economy.

In the previous chapter, each finding was categorized according to the theme that it belongs to. The objective of this chapter is to elaborate upon the major findings that were common among both case study counties, discuss whether or not the findings support the hypothesis, relate them to the larger theoretical perspectives of civic agriculture and alternative agrifood movements, question and probe them for greater understanding and interpretation, and enumerate recommendations for future research. As noted in the previous chapter, these themes are overlapping in many respects, and the individual themes are not mutually exclusive. For example, Corporate Intrusion encompasses issues related to Local Economy and Preserving Locally Embedded Agriculture, and in rural agrarian counties, local agriculture is a key component of the local economy.

Hypothesis

At the outset of the qualitative analysis, I hypothesized that rural, agrarian county-level bans on the propagation of genetically modified organisms are primarily driven by concerns related to genetic drift and the cross-contamination of genetically engineered materials. More specifically, I was anticipating that actors would be responding to perceived environmental, social, and economic threats to organic farmers and others that produce non-genetically engineered plants posed by cross-pollination. While this was certainly a key motivating factor within each county, it was not *the primary motivation* overall. Concern over corporate intrusion appears to be the primary motivating factor when both case study counties are examined collectively; albeit a desire to preserve locally embedded agriculture closely followed this motivation, and concern over the local economy was another key factor. I would like to argue

that these findings do, in fact, support my initial hypothesis because these themes are so closely intertwined. Moreover, the constant thread that runs through each theme is the perceived economic threat to non-GMO farmers posed by cross-pollination.

Summary of Findings

Corporate Intrusion

The theories of civic agriculture and alternative agrifood systems have emerged in response to the dominant industrial agriculture paradigm, which has been widely criticized for concentrating power in the hands of agribusiness corporations (Lyson, 2002; Hauter 2012; Jackson, 2012; Shiva, 2004). Hassanein (2003) speaks to the corporatization of the industrial food system within the context of the alternative framework of food democracy:

Certainly, an oligarchy ruled by a handful of multinational corporations—the obvious tendency in the agro-food system that dominates at present—does not engender much hope for achieving sustainability. Food democracy seeks to expose and challenge the antidemocratic forces of control, and claims the rights and responsibilities of citizens to participate in decision-making. Food democracy ideally means that all members of an agro-food system have equal and effective opportunities for participation in shaping that system, as well as knowledge about the relevant alternative ways of designing and operating the system (Hassanein, 2003, p.83).

The findings of this study indicate that supporters in both counties were motivated by a desire to subvert the ‘anti-democratic forces’ of corporate agribusiness, and reassert their local decision-making authority by enacting ordinances that banned the propagation of genetically modified crops within their respective communities. While pre-existing anti-corporate sentiment among residents, particularly in Mendocino County, likely factored into this conception; the tactics that were employed by the campaigns against the measures were regarded by many sources as unethical and unwelcome intrusions. The following quote from an interview informant in Mendocino County captures this impression:

There was no question that—and I think that every GMO labeling that I’ve looked at since Measure H—the public starts out being negative on GMO food, on GMO crops, on GMO animals and all of it. The public is generally negative for good reasons, and the only way these things have been beaten back is by false information, scare tactics, and confusion. And, that’s what was tried in our county; those were the tactics used in our county against us (Mendocino 7).

Some sources indicated resentment over the perceived abuses of corporate power on the part of the biotechnology industry in general, particularly its legacy of litigating farmers for patent infringement. Many sources found the campaign spending on the part of the external corporate opposition appalling as evidenced by this statement from another Mendocino County informant:

I mean; it was an unbelievable onslaught of outside interests coming into the county. It was a conglomerate of biotech and Big Ag interests, as well as the California Farm Bureau... They spent over \$800,000, which, when you figure there is only 82,000 people that live in the whole county, it was pretty amazing—the level of spending that was going on.” But because we have this pretty progressive voting population, and people started resenting—there was definitely a mood of ‘Corporations can’t push us around!’ that came through as the campaign matured—that people were reacting to that as much as to the issue even (Mendocino 2).

The biotechnology industry’s ability to manipulate public opinion and public policy through the exercise of its overwhelming economic force is well documented in the literature (Hauter, 2012; Shiva, 2004; Egilman & Bohme, 2005; Capelleri et al., 2000; Murphy, 2008). Dahlberg (2001) explains:

The corporate sector not only has unprecedented ability to shape and present images through advertising and the mass media, but also to shape policy and research priorities through campaign contributions, the funding of policy think tanks, and through the cooptation of the academic world (Dahlberg, 2001, p.142).

Some sources described the corporate-funded opposition to the measure as evidence of an attempted ‘corporate takeover’ of the food supply.

And the reality is that this is my food supply, and it is our farmers’ livelihoods and seeing all the money coming in from Monsanto—it’s like they are trying to buy out our food supply (Jackson 2).

So yeah, we know why; they want to control the food supply. They want to intentionally contaminate. It was clear, even back then in 2003, that that was their intention. That was going to

be their strategy; intentional contamination of the non-GMO seed stock. So you couldn't grow a non-GMO food and they would win (Mendocino 7).

The following excerpt from Lyson (2002) serves as a fitting transition between the theme of Corporate Intrusion and that of Local Economy.

Civic agriculture refers to the emergence and growth of community-based agriculture and food-production activities that not only meet consumer demands for fresh, safe and locally produced foods, but also create jobs, encourage entrepreneurship and strengthen community identity. Civic agriculture brings together production and consumption activities within communities and offers consumers real alternatives to the commodities produced, processed and marketed by large agribusiness firms (Lyson, 2002, p.195-196).

Local Economy

The literature concerning agrifood system alternatives emphasizes the importance of fostering linkages between local agricultural producers and consumers as a means of local economic development. Civic agriculture, in particular, can be used as a vehicle for mitigating the frequently destructive impacts of the globalizing, neoliberal forces that drive the dominant industrial paradigm (Lyson, 2005; DeLind, 2002). Lyson & Guptill (2004) explain:

Communities that nurture civic agriculture activities, as one part of a broader plan of diversified economic development, can gain greater control over their economic destinies. They can also enhance the level of social capital among their residents, contribute to rising levels of civic welfare and socioeconomic well-being, revitalize rural landscapes, improve environmental quality, and, ultimately, promote long-term sustainability (Lyson & Guptill, 2004, p.383).

Lyson elaborates on the economic benefits of civic agriculture in a later paper:

Civic agricultural enterprises have a much higher local economic multiplier than farms or food processors that are producing for the global mass market. Dollars spent for locally produced agricultural and food products circulate several more times through the local community than the money spent for food products that are processed and packaged by multinational corporations and sold in national supermarket chains (Lyson, 2005, p.92).

Agriculture plays a vital role in the local economies of both case study counties. Sources in each community indicated that they saw the ordinance as a boon to the local economy. This view is evidenced in the following quotes from interview informants:

People got behind GMO Free Mendocino because it was economically beneficial to the county. It was socially beneficial; it protected the natural features of the county that everybody valued and all we needed to do was to convince people that that was the case (Mendocino 7).

The real practical economic side of how it impacted the farmers here locally and family farm to really, I think, what everybody agreed on (Jackson 1).

More specifically, sources indicated that by limiting the risks of cross-pollination the ordinances would promote the economic viability of agricultural production in local and international markets that increasingly demand GMO-free products. Some sources suggested that the regulations might benefit the local economy by allowing the community to bill itself as a GMO-free region; occupying a unique agricultural niche, and perhaps even fostering agritourism. All of these sentiments are concurrent with the conceptualization of civic agriculture as a driver of economic development as summarized by the following excerpt from Lyson (2005):

Civic agriculture is the embedding of local agricultural and food production in the community. Not only is civic agriculture a source of family income for the farmer and food processor, but civic agricultural enterprises also contribute to the health and vitality of communities in a variety of social, economic, political, and cultural ways (Lyson, 2005, p.92).

Locally Embedded Agriculture

Both civic agriculture and the larger collection of agrifood system alternatives offer sustainable place-based solutions to community problem solving. These theories emphasize the interconnectedness of the unique social, economic, and environmental processes that characterize locally embedded agricultural production within a particular community. This holistic, systems-oriented approach accommodates the participation of a diverse range of stakeholders within the local food system. DeLind (2002) makes reference to this aspect with the following interpretation of civic agriculture:

The term “civic agriculture” frames a collection of food and farming enterprises that addresses the needs of local growers, consumers, rural economies, and communities of place (DeLind, 2002, p.217).

In each community, supporters of the ordinances expressed pride of ownership in their county's agricultural production; indicating that the local farming culture was something that they valued and felt was worth protecting.

It was just something that grabbed the public's imagination because it was protecting our local agriculture—we have a whole lot of organic farmers here—and it was a way of—well, I think mostly protecting local agriculture was seen as very significant (Mendocino 5).

So anyhow, we kind of got consensus that it was necessary to move these things out because it was not in the spirit of the Rogue Valley. I should say in the spirit of farming in the Rogue Valley. And, we don't want any of this. We live in an area that is known for its high-quality foods, high-quality wines and cheeses, and stuff like that. This is not what's up in Rogue Valley. It was pretty clear that it would compromise the integrity; it would directly threaten the existence of the economy of the Valley around the food and agricultural economy (Jackson 2).

As previously noted, a common concern among ordinance supporters in both counties was the potential threat of cross-pollination; both in terms of the effect that it could have upon the values of locally produced commodities, and also because it might prevent farmers from saving their seeds for use the following season. Another concern expressed by sources was the potential negative environmental and human health effects of the chemical herbicides that are associated with the production of GMO crops. Some sources spoke of a desire to defend the diversification of existing local agriculture against the anticipated spread of the monocultures that constitute the dominant industrial agricultural paradigm.

The small family farms across the Rogue Valley, you know; it's just not soybeans and corn and canola and sugar beets. It's Swiss chard; it's like organic and non-GMO. GMO stuff is like for the big dogs, you know; like commodities like you ship all across the planet. That's where the GMO stuff is (Jackson 2).

This was just going to be more of the same, but more on a grand scale and the magnitude and speed that the farmers in your region [Iowa] and elsewhere in the Midwest adopted the GMO crops really made the issue clearly, in my mind, a crisis that needed to be dealt with. And the easiest thing to do was to try and protect the home front, which was what Measure H was all about (Mendocino 7).

Civic agriculture can strengthen local ties among community members, by bringing together a diverse range of stakeholders to collectively engage in preserving and nurturing the

local food system and the local economy. Lyson (2005) describes the coalition-building nature of civic agriculture:

What these civic agriculture efforts have in common is that they have the potential to nurture local economic development, maintain diversity and quality in products, and provide forums where civic farmers and food citizens can come together to solidify bonds of community (Lyson, 2005 p.97).

This aspect of the literature is supported by interviews with key informants who had fond memories of their campaign experiences, and shared anecdotes of new friendships and even new business relationships that were formed during the process.

For all of these reasons, and surely many others, supporters of the measures were empowered to protect the choice and rights of agricultural producers and consumers by pursuing the local regulation of GMOs. The campaigns waged in support of the ordinances united local farmers and citizens in an effort to protect their local food system from unwelcome outside interference. Thus, the citizen-led efforts to ban the local propagation of GMOs in Mendocino and Jackson Counties may be considered manifestations of civic agriculture as conceived by the literature. The next section of this chapter explores the implications of the research.

Research Implications

What do these findings mean for future work in this area? How can they contribute to citizen-led initiatives to regulate biotechnology in other communities around the country? Because this research examines just two case studies, it is important at this juncture to be clear about the constraints of the methodology. One cannot draw confident conclusions about the motivational factors of community members for all people in all circumstances from this study as these factors are contextual and likely to vary from place to place. However, what can be done is use the knowledge gained to determine communities, organizations, and groups of people to

whom it might be best transferable. To do so it is necessary to briefly re-evaluate the context within which the research was conducted.

Scope and Limitations

Both Mendocino and Jackson Counties are rural, agrarian communities that are rich in natural resources. Both counties are located on the west coast of the United States, and were destinations for the back-to-the-land movement that began in the late 1960s. While Mendocino County's reputation as a progressive, liberal community may be traced back to this connection to a particular counterculture characterized by this movement, Jackson County is generally regarded as a much more politically conservative place. However, both counties exhibit a strongly independent ethos in terms of property rights and civic democracy. Both counties are fairly removed from their respective state's largest metropolitan centers, and timber and agriculture have been historically important industries in each place.

It is worth emphasizing that the locally embedded agricultural production of both Mendocino and Jackson Counties stands in marked contrast to the dominant industrialized model that is exemplified by the mass production of monocultures in places like the Midwest's 'Cornbelt' region. Both case study counties enjoy vibrant and unique systems of agriculture that produce a number of diversified commodities. Both places maintain a number of small and medium-sized agricultural operations, and both places have a significant number of local organic farmers. Perhaps most importantly, GMOs were not widely grown in either county at the time that the ordinances were passed. Certainly the work of the GMO-ban supporters would have been made more difficult in a county located in, say, central Iowa, where genetically modified corn and beans are the standard commodities, and the average farm size is much larger. This limits the transferability of the research somewhat, as one could make the argument that the local

agricultural context was an important element to the successful passage of the ordinance in each county.

The social networks and cultural values inherent to the locally embedded agriculture of each place also deserve review. The findings of the research reveal that both Mendocino and Jackson County evince strong community bonds amongst local producers and consumers. Moreover, the level of pride and appreciation for local agriculture indicated by both primary and secondary sources was a key contextual factor in each case study county; citizens recognized the unique nature of their community's agricultural production and regarded it as something that was worth preserving. These connections and values simply may not be present in every farming community. How might the motivational factors of citizens differ in communities where monocultures, GMO commodity crops, and large farms are the norm? How might the motivations of citizens differ in a community without strong agricultural and social networks? These questions deserve further research.

It is also important to consider the anti-GMO movement more generally. Genetic engineering is relatively new and still evolving technology. As noted in Chapter 1, there is no established consensus as to the safety of GMO foods or the long-term effects that GMO crops might have on human and environmental health. The majority of scientific literature supporting both the perceived safety and the potential dangers of biotechnology is highly technical and may be difficult for the average layperson to wade through. Moreover, the polarizing nature of the GMO debate evinced by the media is confusing and perhaps even off-putting. Citizens in both Mendocino and Jackson County took a precautionary stance by enacting local GMO bans; in communities that are not be as familiar or even as interested in genetic engineering this is simply not likely to be a motivating issue. Furthermore, even in communities where a few citizens are

motivated to pursue local regulations, there may not be enough of a groundswell of interest to generate the momentum necessary to enact an ordinance; particularly in the face of the kind of outside corporate pressure that that was exerted in the case study counties. How much citizen interest is necessary for an anti-GMO measure to gain traction? This is yet another question for future research.

Finally, because I was not present in either of the counties during the height of the campaigns, I was unable to observe the events first-hand. Consequently, my data is largely second-hand and relies heavily on the memories of the informants involved in the passage of the ordinances; which in the case of Mendocino County, required sources to recall thoughts and impressions surrounding an event that took place more than a decade ago. Furthermore, the primary data consists of interviews with a relatively limited sample of just 13 informants. Thus, I relied largely on secondary sources in the form of publically available archival data to triangulate the research.

Lessons from Mendocino and Jackson Counties

The implications of this research are broad in scope. The discussion and conclusions presented in this chapter provide insight into the motivating factors that led citizens of rural agrarian counties to pursue and enact local ordinances regulating biotechnology. Although there are clear constraints in generalizing the findings from the analysis of just two case studies and future research is necessary to understand the relationship between the motivating factors and the successful outcomes of the campaigns more fully, the lessons that can be learned from examining the motivations of the supporters of the measures in both Mendocino and Jackson are numerous. These lessons are presented as a series of recommendations, which collectively serve

as a ‘recipe’ for passing local GMO legislation. The recommendations are centered on the processes of identifying the strengths and defining the values of locally embedded agriculture production; framing the issues of GMOs and local GMO regulation; and generating citizen support for an anti-GMO ordinance. I would like to emphasize that these recommendations are based on the results of this study and are not suggestions for future research. The following list elucidates some recommendations, which might be helpful to activists, citizens groups, and community leaders interested in pursuing similar land use controls:

1. Spend time collectively examining the locally embedded agricultural production of your community. Identify the aspects that are unique or special to the place. Identify existing strengths, as well as areas of opportunity for future diversification or specialization. Which aspects of the local agriculture can the group agree are worth preserving or protecting?
2. As a group, begin discussing the common values and cultural traditions that are connected to local agriculture in your community. How can these values and traditions be utilized to encourage citizens to reassert personal and collective agency within the food system and the wider sociopolitical arena?
3. Assess the existing local networks of agricultural producers and consumers. Identify ways in which these connections might be strengthened or built upon. How might they be used to support or encourage a local GMO ordinance? Examine the social bonds and local institutions that connect producers and consumers. Create opportunities for stakeholders throughout the food system to engage in conversations about local agriculture. Seek out organizations with missions or values that are compatible with the group’s desire to safeguard local agriculture from genetic engineering.
4. Educate yourself and your group about the ecological processes of cross-pollination and the scientific research concerning GMOs. Encourage community dialogues about these issues and ask questions about how GMOs might affect local human and environmental health, as well as locally embedded agricultural production and the local economy. Explore the relationship between GMOs and the dominant industrial agriculture paradigm. Are these in accordance with the commonly held values and traditions of your community? At times, the issue of GMOs might seem overwhelming; remember to be supportive and encouraging to your group members.
5. Utilize the ideas that emerge from these dialogues to begin framing the issue of local GMO regulation. Experiment with different approaches, and discuss which ones are most compelling to participants. Explore different ways of contextualizing the issue with personal anecdotes that are appealing to and easily understood by a wide range of

citizens. Try to emphasize the positive elements over the negative ones (e.g. “We like that our farmers can choose to plant non-GMO crops” rather than “We don’t want GMOs to contaminate our farms”). The distinction is subtle but may provide a greater sense of efficacy.

6. Once you’ve honed your narrative, start getting the message out by holding public meetings and educational and social events to generate citizen support. Utilize the personal relationships that participants have to broaden the reach of your group. Maintain a grassroots, decentralized structure and focus on person-to-person communication. Try to keep it fun and be sure to periodically celebrate together over food. This encourages people to connect more deeply, both with one another and with the local food system.

Recommendations for Future Research

This research leaves many questions unanswered; several of which have been described already. This study focused on the motivations of citizens that supported local GMO regulation; researchers interested in studying motivating factors might consider a more neutral research design, which considers the motivating factors of those citizens who opposed such measures. As previously mentioned, there is still no clear consensus regarding the safety of genetically modified food crops. Obviously further scientific research is needed to better understand the potential benefits and risks of GMOs and the related chemical pesticides that are used in their production, particularly over the long-term; however, such research is beyond the realm of the planning field and the intended audience of this study.

Governments and private industries have done an effective job of encouraging us to believe that there is no need to regulate GMOs beyond the federal level. Are stricter regulations necessary? And if so, whose responsibility is it to make those regulations? Are GMOs really an attempt by powerful corporations to achieve total dominion over the food supply? Again, some of these questions likely extend beyond the scope of food system planning literature, yet they bear mentioning nonetheless.

Returning to the subject of biotechnology regulation at the local level, there are a number of additional questions. What, if any, responsibilities do farmers growing GMOs in close proximity to organic or non-GMO farmers have to reduce the likelihood of cross-contamination? How effective have the local bans proven in keeping GMOs out of the community? How effective have they been in terms of preventing cross-pollination? What effects have they had upon local agricultural production and local economy? How have the bans affected local social connections among citizens? Have the campaigns fostered increased trust for local government among citizens? Did the campaign process strengthen community bonds? Did the process improve representativeness? Have the coalitions established during the campaigns generated more public involvement in subsequent policy decisions? How might the local anti-GMO movements be broadened to a regional or state scale?

Finally, it must be reiterated that the problem is not the propagation of GMOs themselves, but rather the system of law that allows GMOs to be imposed upon communities without their consent. By banning the propagation of GMOs, Mendocino and Jackson Counties are calling attention to the ways in which the current system of governance often denies communities the legal authority to build sustainable farm and food systems. These ordinances reframe the issue through collective, non-violent civil disobedience in the form of local legislation that rejects the notion of corporate personhood. This notion recognizes corporations as persons, and has been utilized to enact state-preemption bills that override the rights of communities to regulate locally important matters like GMOs, chemical pesticides, factory farms, and fracking.

This presents a number of additional questions. Further research into the challenges presented by state seed preemption bills, including the constitutionality of these regulations is

necessary. Further research into the constitutionality of federal legislation like the so-called “Monsanto Protection Act” is also necessary. Should corporations be granted the same set of constitutional rights as individual citizens? If the answer is no, what is the best means of creating the sort of structural changes that are necessary to restore the authority of local jurisdictions to self-govern? Why are some communities apparently more motivated than others to pursue this kind of change? How can these local movements be expanded or built upon to encourage higher-level structural change? Is there a potential for regional movements that would include multiple jurisdictions? What legal mechanisms might be available to communities located in states where the citizen initiative and referendum processes are absent?

Conducting this research has been a great pleasure because it has allowed me to connect with a passionate group of farmers and citizens who rallied together and fought against the odds to ‘take back the commons’ of their local agriculture. I enjoyed hearing informants’ tales of citizen democracy in action, and I found their reverence for the land, food, and people of their communities inspiring. Their connection to place was stronger than any conventional political loyalties; stronger even than the powerful outside corporate interests that spent more than a million dollars in attempts to defeat both initiatives. The results of the campaigns in each community were a win for local democracy and the future of the broader sustainable food movement.

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