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The Role of Unpaid and Alternative Labor on Organic and Sustainability-oriented Farms

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The Role of Unpaid and Alternative Labor on Organic and Sustainability-oriented Farms

Senior Project submitted to
The Division of Social Studies
of Bard College

by
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Annandale-on-Hudson, New York

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Abstract

Organic and otherwise ecologically sustainable farming methods are generally known to be more labor intensive, largely due to the lack of synthetic herbicides and pesticides. The ways in which such a labor demand might be met has not been the focus of many studies. There is some evidence that suggests that forms of unpaid or reduced pay alternative labor might help meet this extra demand on small sustainable farms. Using a content analysis of thirteen farmer interviews in Upstate New York, this paper will review the possible roles of unpaid and alternative labor on organic farms, as well as their potential pitfalls. Farmer responses varied depending on the type of labor employed; while volunteer labor was considered economically beneficial, most of the farmers that used alternative labor in the form of reduced wage or unpaid apprenticeship noted that hired labor would be a more efficient labor source. Regardless of how integral unpaid laborers were to the functioning of the farms, all of the farmers stressed that they were more interested in reaping the social benefits of alternative labor than the economic benefits. These social benefits include but are not limited to: emotional support, the dissemination of sustainable farming ideas and knowledge sharing. The results of this study will be discussed in the context of recent literature that legally and ethically problematizes such labor.

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Chapter 1: Introduction

1.1 Inputs on organic farms

The viability of organic agriculture has long been the subject of academic and public debate.

Before the organic method became known as the paragon of ecologically responsible farming, it was valued for its' low-energy requirements. Organic farming first came of widespread interest in the 1970s when it was heralded as a low-input alternative to conventional farming (Guthman 2014). At a time when energy prices were volatile and unpredictable, the avoidance of high energy agricultural inputs such as fertilizer and pesticide was increasingly attractive (Lockeretz et al. 1981, Klepper et al. 1977, Pimentel et al. 1983, Berardi 1978).

While organic agriculture has retained and even exceeded its' reputation as a less energy intensive alternative to organic farming in terms of fossil fuel, fertilizer and pesticide inputs; it is widely regarded as a more labor intensive mode of farming (Post and Schahczenski 2012, Pimentel et al. 2005, Morison et al. 2005, FAO 2018). Indeed, many organic practices substitute labor in lieu of energy. The decision to forego herbicides means that weeds must be either manually or mechanically removed in order to prevent competition with the crops (Pimentel et al. 2005, Karlen et al. 1995). The use of crop diversity to minimize pests makes it difficult for small-scale organic farmers to mechanize which increases the need for human labor (Pimentel 2005, Post and Schahczenski 2012). While the early literature hailed the organic method for its' lack of energy inputs (Lockeretz et al. 1981, Pimentel et al. 1983, Klepper et al. 1977, Berardi 1978), recent literature recognizes that labor is an input that poses a major obstacle to the viability of organic farming.

In spite of obstacles such as the increased cost of production, the organic sector has increased exponentially since its inception in the 1970s. Organic labels, such as the USDA seal and other well-established third party certifications (e.g. Demeter Biodynamic, Certified Naturally Grown, Eco-fruit), pepper supermarket shelves. According to a 2016 study by the Organic Trade Association, 82% of American households are buying organic products of some form (OTA 2016). The amount of acreage in organic crop production and organic pasture has correspondingly risen from 2.3 million acres in 2001 (Greene and Kremen 2003) to more than 5 million acres in 2016 (USDA 2016). The upward trend continues, with a 2018 report estimating that organic crop acreage has since reached 6.5 million acres (Mercaris Acreage Report 2018).

The expansion of the organic sector in spite of high production costs is often attributed to the existence of price premiums, made possible by consumer willingness to pay more for what is perceived as nutritionally superior and environmentally innocuous foods (Zepeda and Nie 2012). Organic prices have remained much higher than conventional prices since the 1990s, when prices were between 65% and 140% higher for organic produce (Pimentel et al. 2005). These higher prices have been found to offset the increased cost of organic food production, making sustainable farming a financially viable and even a lucrative option for farmers (Post and Schahczenski 2012, OFRF 2012, SARE 2013, Delbridge et al. 2011). However, farmer reliance on price premiums may not be sustainable. As additional growers enter the market, including very large corporations, competition may lead to lower prices so that farmers may not be able to rely on these premiums into the future (Bechtel 2019). Not only are price premiums inherently unreliable, they may also exclude low income consumers from buying organic products (Dettman and Dimitri 2009; Paul and Rana 2012). The unreliability of price premiums in

conjunction with their exclusionary ramifications make it imperative that investigate more permanent and longstanding ways in which organic farmers can minimize their production costs to make sustainable farming a financially viable technique without the aid of market forces. Perhaps the most major difference in production cost between conventional and organic farms is the increased cost of labor.

1.2 Labor and the Agrarian Myth

The neglect of the increased labor demand on small organic farms is perhaps a symptom of the greater misunderstanding that associates agrarianism with small-scale organic agriculture.

Agrarianism is the social philosophy that encourages nostalgia for the traditional structure of farming in the U.S., one wherein independent family farmers worked small parcels of land to provide for themselves or for the local population (Guthman 2004). As Julie Guthman argues in her book, *Agrarian Dreams*, part of the agrarian view romanticizes the difficulty of farming; this aspect of the philosophy perpetuates the idea that farmers willingly embrace the traditional thanklessness of farming. Indeed, Wendell Berry, a well-known spokesperson of agrarianism, has famously perpetuated the agrarian view of farmers as grisly, independent people. As recently as 2009, Berry wrote that “[farmers] love the weather, maybe even when it is making them miserable. They love to live where they work and to work where they live...they love the measure of independence that farm life can still provide (Berry 2009).” The agrarian image of the farmer as an independent entity that embraces the difficulty of farming renders criticism of labor on small scale farms obsolete. As Margaret Gray asserts in her book, *Labor and the Locavore*, the ideals of agrarianism “have written out of the record the role of hired labor,” glorifying the “self-reliant yeomanry” of small farmers and failing to indulge the possibility of

worker exploitation (Gray 2004). Gray also argues that the agrarian ideal is particularly associated with small scale sustainable farms where the invisibility of hired labor compounded with the otherwise virtuous characteristics of such farms falsely leads the consumer to assume self-reliance or at least fair treatment of workers. The reality is that while the self-reliant yeoman might still exist, small scale organic and sustainability-oriented farmers are not alone in their farming endeavors and in fact require more labor than their conventional counterparts.

1.3 Alternative labor arrangements

Although scholars and farmers attest to the labor intensiveness of ecologically sustainable methods (Mahoney et al. 2004, Post and Schahczenski 2012, Pimentel et al. 2005, Hanson et al. 1997, Cavigelli et al. 2009, Uematsu and Mishra 2012, SARE 2013), there is little literature on the specific ways in which farmers overcome this obstacle. How might small sustainability-oriented farmers meet this increased demand for labor? In her study of sustainable farms in the Hudson Valley, Margaret Gray found that aside from the paternalistic qualities of the farmer-worker relationship, the treatment of workers, including their pay, was not largely different from that of conventional farms. The exploitation of cheap undocumented labor was equally prevalent on these otherwise public-spirited farms (Gray 2014). Still, there are other understudied ways in which small organic and sustainable farmers meet this demand. The use of unpaid or alternative labor is sometimes considered a solution.

“Unpaid and alternative labor” is a phrase I use here that encompasses any kind of labor that does not involve the traditional exchange of work for monetary payment. The WWOOF¹ and

¹ World Wide Opportunities on Organic Farms, <http://wwooof.net/>

Workaway² programs are perhaps the most well-known forms of unpaid labor on farms; these third-party sites facilitate work exchanges between individual volunteers and participating host farms all over the world. The exchange is complex and varies between each farm; however, it usually involves a volunteer working 4-6 hours a day for a minimum of one week in exchange for room and board. Room and board can manifest in many different ways with some farmers offering tent sites and others offering entire houses to their volunteers. Although there are online resources and guides for farm hosts to use in an effort to foster healthy relationships with their volunteers, there is little oversight once the participant is connected with the host. This perhaps contributes to the idea that each volunteer experience is relatively unique (Ord and Amer 2010, Shreck et al. 2006). The idea behind programs like WWOOF and Workaway, according to the online program descriptions and my own experience using both programs, is that the volunteer is not necessarily working for free, but is being paid in less traditional forms of payment such as housing, food, cultural exchange and education.

Internships and apprenticeships are another form of alternative labor, although they might be unpaid, reduced-pay or fully paid positions. Internships and apprenticeships generally have a more serious educational connotation. Interns and apprentices generally exhibit a more formal interest in farming as a job whereas WWOOF and Workaway volunteers might have a variety of motivations (Kalyuzhny et al. 2012, Wood 2013, Delgado 2013). There is a myriad of other forms of alternative labor such as U-Pick, school groups who volunteer for a day, CSA exchanges where customers provide work in return for a CSA share. However, the degree to which these programs affect or alleviate the increased labor demand of small organic and

² <https://www.workaway.info/>

sustainability-oriented farms is unknown. The few studies that touch on the role of unpaid and alternative labor are largely qualitative and conclude quite unanimously that such labor is economically important and sometimes even critical to small sustainable farms.

1.4 Roadmap

This project considers these lesser known forms of labor and how they might address the issue of increased labor demand on organic and sustainability-oriented farms. In the next chapter, I will review the past and present literature on (1) the evolving ideas about labor demand on organic farms and (2) how unpaid and alternative labor is thought to address this demand on small sustainable farms. The third chapter will review the criteria I used to select and interview farms. I will also review the questions used to explore farmer perceptions of labor demand on organic vegetable farms and fruit orchards in the Hudson Valley and greater upstate New York region. These interviews provide insights into labor needs and specifically use of unpaid and alternative labor on sustainable farms in the region. The fourth chapter will detail the common themes across farmer responses regarding their use or nonuse of unpaid and alternative labor. Insight into the potential motives and trustworthiness of farmer answers will not be considered at length because the papers reviewed here on this subject were not sensitive to such analysis. The fifth chapter will be a discussion of how the interview responses confirm or contradict existing ideas about labor on organic farms; namely the ideas that, (1) there is an increased labor demand on sustainable farms and (2) unpaid and alternative labor might address this increased demand.

Chapter 2: The Role of Labor in Organic Farming Literature

The difference between organic and conventional agriculture has historically been expressed in terms of inputs and outputs; organic farming has been characterized as low-input and low-output whereas conventional farming is generally considered high-input and high-output. The low input reputation of organic farming stems from its prohibition of inorganic fertilizers or pesticides (Lockeretz et al. 1981, Pimentel et al. 1983, Klepper et al. 1977, Berardi 1978). The low output of organic farming is closely linked to its' lack of inputs, which may reduce crop yields and protein content in some crops (Klepper et al. 1977; Pimentel et al. 1983, Berardi 1978). Although the reduced productive capacity of organic farming was widely accepted in earlier studies (Berardi 1978; Shearer et al. 1981; Lockeretz et al. 1981), it is currently disputed and is the subject of ongoing analysis (Seufert et al. 2012, Ponti et al. 2012, Ponisio et al. 2015, Orsini et al. 2016, Connor 2013).

The decades-long debate in the effort to champion one farming method over the other has historically been a struggle to correct either the deficit of organic output or the extremity of conventional inputs. With recent literature disputing the severity of the yield gap between conventional and organic farming, perhaps rendering organic farming as both low-input *and* high-output, it would logically seem that the debate is resolved. However, another issue emerges when we consider the fact that chemical and fossil fuel inputs in organic farming are substituted with labor (Pimentel et al. 2005, Post and Schahczenski 2012, FAO 2018). Considering the increased labor demand of organic farming, it is legitimate to ask whether or not organic and sustainability-oriented agriculture is truly as low input as has been perceived.

This chapter will map how views on organic farming have evolved over time, from an early emphasis on the benefits of low fossil fuel inputs to a more recent concern about yield gaps and increased labor demand. In summarizing the academic literature on the productivity of organic and conventional agriculture, labor emerges as a neglected but highly influential factor in determining the average production costs of organic farming. In particular, existing ways in which high labor demands have been met by organic farmers is the focus of this chapter.

2.1 Early organic-conventional comparisons viewed organic farming as a low-input alternative to conventional farming

In the present day, organic farming is strongly associated with environmental benefits such as erosion control, carbon sequestration, pollution management and health benefits (Pimentel et al. 2005, Hepperly et al. 2007, Gattinger et al. 2012). However, much of the early academic interest in organic farming was grounded in its economic promise as a low input and therefore, low cost mode of agriculture. In the 1970s, the U.S. underwent an energy crisis, stimulating strong interest in how to minimize agricultural dependence on fossil fuels. Between 1970 and 1980, the price of oil increased by 600%, due to international conflict and lack of supply (IEA 2006). The unpredictable and extreme vacillation of energy prices along with the growing concern about the finite supply of conventional energy sources generated concern about the price of agricultural fertilizer and fuel for farm machinery (Lockeretz et al. 1981, Klepper et al. 1977, Pimentel et al. 1983). This concern resulted in a growing interest in farming alternatives that use less energy such as organic farming; in some of the first academic organic/conventional comparisons, the energy crisis is explicitly referenced, with authors frequently citing increases in the price of

fertilizer and shortages in the supply of fertilizer as the impetus for their interest in low-input farming (Klepper et al. 1977; Lockeretz et al. 1981; Berardi 1978; Pimentel et al. 1983).

The advent of a low-input farming method was confirmed when studies confirmed the viability of such a method on large scale farms. The decrease in energy usage in the organic fields was in one case two times lower than that of the conventional fields (Klepper et al. 1977). Discrepancies in energy usage were often attributed to the lack of synthetic fertilizer (Klepper et al. 1977; Lockeretz et al. 1981). Synthetic fertilizers, especially synthetic nitrogen fertilizers, are particularly energy intensive to produce; the process involves the conversion of atmospheric nitrogen into reactive nitrogen. In organic farming, synthetic fertilizers are replaced with manure and nitrogen-fixing cover crops; these forms of nitrogen fertilizer require little to no fossil fuel to produce but are more slow-releasing forms of fertilizer (Clark and Tilman 2017).

The exciting promise of low energy farming was lessened by the accompanying finding that organic farming is lower yielding, a conclusion that immediately emerged as the primary restrictive downside of organic farming. These early studies found organic yields to be between 10% (Lockeretz et al. 1981) and 29% (Berardi 1978). The increased labor demand of organic farming as a limitation to its' was largely neglected in these studies, although there was brief mention of a slight increase in labor costs (Klepper et al. 1977; Berardi 1978; Lockeretz et al. 1981; Pimentel et al. 1983). This slight increase in labor costs on the organic farms was often attributed to factors unrelated to the organic production method (Lockeretz et al. 1981). For example, while Lockeretz et al. (1981) found that organic field crops in the Midwest needed 12% more labor per unit of crop produced, they concluded that the difference in labor inputs was a reflection of "crop mix and cultivation" and not the "fundamental differences in production

methods or machinery.” The disregard of increased labor demand is perhaps due to the characteristics of the farms sampled. Many of the participating farms were monocultures of field crops, which are much easier to mechanize, regardless of whether or not they are organic or conventional. Still, the resounding idea at the inception of organic popularity, was that the yield gap was the primary limitation of the organic method, not the increased labor demand.

2.2 Contemporary literature recognizes the increased production cost of organic and sustainability-oriented agriculture

As the yield gap of organic and conventional agriculture becomes more controversial and uncertain, the labor intensity of organic farming methods has received significantly more attention in recent literature. It is widely accepted in both popular and academic literature that organic agriculture requires more human labor (FAO 2018, Uematsu and Mishra 2011, Brumfield et al. 2000, Karlen et al. 1995, Nguyen and Haynes 1995). Popular science and agriculture publications like National Geographic and Western Farm Press use this idea consistently as a precautionary warning to farmers interested in transitioning to organic and consumers overzealous in their confidence in organic farming methods (Cernansky 2018, Robinson 2013, Dirr 2012).

Although the popular understanding of labor on organic farms is consistent, the academic literature is not without variability. In a compilation of literature on the economics of organic farming, Pimentel et al. (2005) found that while some organic farms need as little as 7% more labor than their conventional counterparts, others require as much as 75% more labor. This variability is a reflection of the variability of experimental methodology and farm characteristics. Indeed, the polar ends of the range Pimentel et al. (2005) found were two studies with entirely

different experimental structures; one that was a whole farm analysis including three different vegetable crops on one farm in New Jersey (Brumfield et al. 2000) and the other was an analysis of field crops on four adjoining 40 acre farms in Iowa (Karlen et al. 1995).

An understanding of labor intensity on various organic farms can be more crystalized when considering farm characteristics such as farm structure, crop type and years since transition to the organic model (Orsini et al. 2016, Ponisio et al. 2015). Farm size is a relatively straightforward indicator of labor intensity. There is generally a negative relationship between farm size and labor intensity; small organic farms are generally more labor intensive than conventional farms (Morison et al. 2005; Orsini et al. 2016). This is likely because the larger organic farms that produce few crops or have single large fields containing one crop at a time (i.e. monocultures) are able to mechanize their production, whereas it is much more difficult to mechanize small, highly diversified farms (Ponisio et al. 2015).

The amount of labor necessary on a given farm also varies widely between crop type. In a 2011 study of various organic fruit and vegetable operations, Klonsky et al. (2011) found that the necessity of “hand labor” varied significantly between different crops; organic tomatoes required three times more hand labor than conventional tomatoes, while organic field corn required the same amount of hand labor as conventional field corn. This finding is representative of the larger idea that all vegetable farms generally require more hand labor than field crop farms because there is less technology to aid in the mechanization of fruit and vegetable harvesting (Martin 1983; Calvin and Martin 2010).

The amount of time since a given farm converted to organic may also influence the labor requirement. Farms that are still in transition are sometimes more labor intensive because

farmers in transition are lacking the skill set particular to organic farming (SARE 2003; Delbridge et al. 2017; DiGiacomo and King 2015). Indeed, in a profile of 10 transitioning farms, farmers testified to the steep learning curve of the organic method (DiGiacomo and King 2015). Farms in transition do not always require more labor; Brown et al. (2017) conducted a survey of more than 600 farms across the U.S. did not find a clear trend in the relationship between labor costs and farms in transition.

Although there is significant evidence of the increased labor demand on organic and sustainable farms, there is also evidence that this relationship is not necessarily inevitable. In fact, ecological practices such as crop rotation, cover cropping and the use of beneficial ancillary crops are sometimes associated with decreased labor inputs (Altieri 1999; Landis 2017). For example, Davis et al. (2012) found, in a study of organic field crops in Iowa, that the more diverse crop rotations effectively suppressed weeds as much as synthetic herbicides did on conventional systems. Similarly, Liebman and Staver (2001) found that cropping system diversity within different rotations (i.e. compounded spatial and temporal diversity) effectively prevents the persistence of pests. The decrease in labor intensity that follows from temporal diversity and ancillary cropping is generally found in studies about large field crops involving temporal diversity (Davis et al. 2012; Liebman and Stavor 2001; Zwickle 2011). Little research has been conducted on the effect of temporal and spatial crop diversity on small, vegetable operations; furthermore, the extent to which such practices might reduce the labor demand on organic vegetable farms has not been extensively addressed. In a study of 36 diverse permaculture farms in the U.S., Ferguson and Lovell found that there was a clear positive relationship between diversity and returns to labor. This study suggests that ecological practices

do not have to create more labor. Still, as Ferguson and Lovell mention in the beginning of their study, most of the evidence to support the promise of temporal diversification practices in reducing labor demands on organic and sustainable farms is colloquial. Without extensive scholarly research investigating the extent to which ecosystem services might replace labor inputs on small sustainable operations, the labor intensity of organic and sustainable agriculture continues to be a core obstacle.

2.3 Alternative Forms of Labor

Alternative and unpaid forms of farm labor are not a new phenomenon. Indeed, the prevalence of short-term hired labor in American agriculture emerged in the 1950s, when industrial agriculture became the norm. For much of U.S. history after colonization, farm work was performed by family members, usually for no wage (USDA ERS 2018; MacAuley and Niewolny 2016). The use of family labor decreased by 73% between 1950 and 2000 (NASS FLS 2019). This transition was the result of a number of factors, but was largely attributed to the idea that farming was no longer an attractive profession for the younger populations. With the rise of hired labor, family labor did not entirely vanish. In 2000, there were still more than 2 million family farmworkers (NASS FLS). The disappearance of the family farmworker is dampened by the advertisement of most farms in the U.S. as “family farms.” Indeed, the USDA asserts that 96% of U.S. farms are “family farms.” However, this assertion is misleading considering that the USDA definition of a family farm is “any farm organized as a sole proprietorship, partnership, or family corporation... exclud[ing] farms organized as nonfamily corporations or cooperatives, as well as farms with hired managers (NIFA USDA 2019).” By this definition a 30,000 acre CAFO with a team of only nine hired employees owned and managed by one person is considered a family farm (Bunge

2017). Despite the perseverance of the family farm in formal records, the traditional family farm that employs the use of free, family labor, is steadily disappearing. In its place are cheap hired labor and, to a much lesser degree, new forms of alternative and unpaid labor.

One of the largest sectors of alternative labor is the farm apprenticeship or internship, wherein a non-family member works beside a farmer, usually for no pay, in the hopes of learning how to become a farmer. The number of apprenticeships is growing in North America in part as a response to the diminishing number of “beginning farmers” (MacAuley and Niewolny 2016, Ekers and Levkoe 2015; Kalyuzhny et al. 2012). The anticipation of this problem has inspired some farmers to join forces in an effort to refine their internship and apprenticeship programs. CRAFT (Collaborative Regional Alliance for Farmer Training) in the U.S. and SOIL (Stewards of Irreplaceable Land) in Canada are two such coalitions that are actively working to create comprehensive apprenticeship programs that integrate a “learning by doing” approach with more formal classroom experience in order to support a new generation of sustainable farmers. However, not all apprenticeships and internships are formalized in such a way; while farmers might be engaging with apprenticeships for the altruistic purpose of training the next generation of farmers, they still generally consider the labor provided by apprenticeships, often for free or reduced pay, of utmost importance (MacAuley and Niewolny 2016, Ekers and Levkoe 2015, Kalyuzhny et al. 2012, Ekers et al. 2016). Indeed, in a survey of Virginia farmers, McAuley and Niewolny (2015) found that 78% of the participants testified that their apprentices’ labor was “very important.” In a survey of organic farms that use interns and volunteers in Ontario, Ekers et al. (2016) found that 60% of the farmers they interviewed were “dependent on non-waged workers.”

A considerably more recent iteration of alternative labor is in the form of volunteer programs such as WWOOF and Workaway, sometimes called “volunteer tourism” in an effort to highlight the mutual exchange that ideally occurs between farm host and farm volunteer (Terry 2014; Ord and Amer 2010; Yamamoto and Engelsted 2014). These positions are largely unpaid, with a select few hosts choosing to pay their volunteers a stipend. The WWOOF program, which preceded the Workaway program, was started in 1971 when Sue Coppard, a secretary in urban England, organized a group of people to visit a biodynamic farm in the countryside. Her aim was to facilitate access to the countryside for people that might not otherwise be offered the opportunity (WWOOF International Website 2019). As the program evolved, the need for labor during harvest time was also recognized by the participants and the mutual relationship that WWOOF advertises today was born. Indeed, the WWOOF acronym was changed from “Working Weekends on Organic Farms” to “Willing Workers on Organic Farms,” as a reflection of the farms needing or wanting longer term labor.

The labor provided by programs such as WWOOF and Workaway in North America has been framed as essential by a niche sect of literature. Research by Ord and Amer (2010) that surveyed almost all of the WWOOF hosts in Ontario, Canada found that volunteers provide a valuable source of labor to their hosts, with 98% of farm hosts continuing to use the program after their first use. Terry (2014) also confirmed that WWOOF has “economic benefits... especially in dealing with labor shortages.”

The mention of free labor as an incentive to use volunteer tourism is usually accompanied by the mention of the social benefits provided. Ord and Amer (2010) found that, when asked about the value of their participation in WWOOF, farmers were equally interested in the “skills-

learning value of the exchange”, “intercultural exchange” and the “social and interpersonal benefits of hosting volunteers” as they were interested in free labor (Ord and Amer 2010).” Terry (2014) also concluded that volunteer tourism is associated with non-economic benefits such as social movement reproduction and “knowledge transfer.”

Agritourism was another sect of programming that I include in my definition of unpaid labor. Agritourism is usually defined as a market-based activity that can supplement income from production (Che et al. 2005; Tew and Barbieri 2012). Activities that are considered forms of agritourism can be long term, including programs like Pick-Your-Own (U-Pick), or more short-term activities such as hay rides, corn mazes and barn dances. U-Pick might be considered a form of unpaid labor because it replaces the labor that would otherwise be done by paid workers whereas other agritourism such as corn mazes and hayrides are almost entirely separate from the production component of any given farm.

The current literature on alternative and unpaid labor suggests that it is an economically and socially beneficial way to train future farmers and involve community members in agriculture at a time when farming is not a pervasive part of pedestrian life. The use of such labor is often paired with the commonly held and academically supported idea that sustainable farming is more labor intensive than conventional farming. While it has been suggested that the labor intensiveness of sustainable farming might be reduced with the proper implementation of ecological practices, there is little research on how this might be done on small, vegetable farms. The prevailing idea remains that sustainable farming replaces inorganic energy with human labor. The following sections will explore the extent to which unpaid and alternative labor

addresses this problem by examining the interview responses of thirteen sustainability-oriented farmers in Upstate New York.

Chapter 3: Methods

3.1 Defining Terms

The methods utilized to investigate the role of unpaid and alternative labor on sustainability-oriented farms in the Hudson Valley consisted of a literature review, interviews with a small set of farmers in the region, and analysis of the results. Recruitment and interview procedures were approved by the Bard Internal Review Board (Bard IRB). The terms “unpaid labor” and “sustainability oriented” are defined as follows.

I define the term “unpaid labor” as any work in service to a commercial farm that is not compensated with a full monetary wage. The most crystalized form of unpaid labor is in the form of Workaway and WWOOF volunteers. However, the definition also includes apprenticeships and internships that are either completely unpaid or those that involve reduced pay and/or non-monetary work exchanges (i.e. exchanging work for housing and food). Unpaid labor also encompasses day labor in the form of school groups and other volunteer groups helping on a farm for a short amount of time.

The term “sustainability-oriented” is in reference to farms that diverge from the conventional mode of farming in favor of more ecologically respectful practices. These practices include intercropping, cover cropping, hand weeding, use of natural USDA approved pesticides, and no-till farming among others (Pimentel et al. 2005). I classify farms that are not USDA-certified organic as “sustainability-oriented” in favor of addressing the situations when small farms are unable to or simply do not deem necessary the organic certification, despite fulfillment of most if not all of the regulations.

3.2 Farmer Recruitment

I sought farms that did not incorporate livestock operations, focusing primarily on vegetable and fruit operations, though some of the farms in the final sample did have small livestock practices. The exclusion of livestock farms was an effort to decrease major differences across the farms; there are significant differences in labor practices between organic livestock operations and organic produce farms just by virtue of the different tasks. Furthermore, the common trope that organic or alternative farming requires more labor is generally in reference to produce farms indicating that livestock farmers might not have much to contribute to the subject. Orchards were included in the sample partly because there is a large concentration of orchards in the Hudson Valley and also because of my interest in labor differences between organic perennial produce and organic annual produce. Additionally, I wanted to classify U-Pick as a form of unpaid labor, which is a marketing practice most common in tree-fruit orchards.

Recruitment of participants for the interview process was varied. In the initial phase, farmers were approached at two different farmers markets: the Rhinebeck farmers market and the Kingston farmers market. In late November 2018, I approached ten farms at their market locations. I gave them a brief overview of the project and asked if they would like to join an email list of potential participants. Although all farms agreed to join the email list, few responded to the email I sent afterward. Since this mode of recruitment was not effective, I used online searches to find more farms, emailing a total of 40 farms. The response rate increased but I found that few of the farms used unpaid labor in the form of Workawayers and WWOOFers. In an effort to ensure that such farms would be part of the sample, I decided to use the Workaway site to contact farms that definitely used unpaid labor. I used Workaway because I already had a

preexisting account whereas I did not have a WWOOF account. At this stage of recruitment, I decided to broaden my potential participant pool to farmers in the greater Upstate New York area and nearby Massachusetts since there were few Workaway hosts in the Hudson Valley area. The broadening of my participant pool enabled me to reach a total of 13 participants over the course of four months (December 2018 - March 2019). The recruitment process also ensured that the participants were aware that the project was in no way related to undocumented labor.

An important decision I made regarding recruitment was not requiring that the participants have a history of using unpaid labor. This was in part because I did not find many farms that used unpaid labor; however, it was also because the farmers that did not use unpaid labor often had valuable opinions or insight on the matter. As a result, I tailored some of the questions to those farmers that did not engage with unpaid labor in order to understand their (conscious or subconscious) choice to not use unpaid labor.

3.3 Interview Process

Interviews were conducted either in person, via Skype or over the phone. The type of meeting was determined by the participant via email. A majority of the interviews were recorded with the permission of the participant so that I could extract specific quotes retroactively. The interview consisted of 30 questions and took approximately 45 minutes each (see Appendix A). The questions were geared toward understanding (1) how the farm approaches sustainability if at all (2) how the farm organizes its labor structure and (3) how that labor structure is informed by their degree of sustainability.

The quantitative questions regarded technical aspects of the farm (e.g. what are your yearly labor costs? How many acres do you farm?). The qualitative questions were more

conversational and enabled the participant to “think out loud” without direction. The questions were split into two sections, with three subsections each. Section A, titled Farm Characteristics, involved the demographics was separated into the following three categories: farm characteristics, farmer history, sustainability history, and labor and income. Section B was titled “Perceptions About Unpaid Labor” with three subsections that were titled as follows: “Sustainability and Labor,” “History of Unpaid Labor,” and “Farmer Experience with Unpaid Labor.” For the Section B questions, all of the questions were worded in such a way that was not leading. For example, I asked, “How do you envision the role of volunteer labor on your farm in the future?” rather than “Is it a goal of yours to not use volunteer labor in the future?” which might imply that using volunteer labor is inherently problematic.

Questions using the term “unpaid labor” were understandably met with defensiveness so after a few interviews, I made an effort to explain that “unpaid labor” was a neutral term I coined myself to explain the broad range of alternative labor I was partially interested in. In retrospect, I might have just used the word “alternative labor.” This gesture made the participants expressly more comfortable; although, my clarification might be perceived as a sort of breach of impartiality.

Key responses were coded into a spreadsheet and analyzed for common features. Recordings of the interviews were used to refresh my memory of details and also as a source for direct quotes used to illustrate key ideas in the results section.

Chapter 4: Results

4.1 Participant Demographics

Farm Types

Thirteen farmers were interviewed; although one of these farmers self-identified as a homesteader more than a farmer. It is important to note that many of the farmers did not solely grow vegetables or fruit. Only five vegetable farms and one orchard were dedicated to one particular type of crop. The remaining farms had some combination of vegetable production, fruit production and livestock rearing. One orchard stated that 50% of their income came from the sale of vegetables, although the majority of their land was dedicated to tree fruit. Another orchard manager on a 200-acre orchard had 30 acres in vegetable production. The representation of some farms as vegetable farms and others as orchards was decided on the basis of the majority of crop production on each farm. There was one farm where the livestock and grain production was significantly larger than the vegetable production. At a little more than 1,000 acres, this farm had about 500 acres in grain production, 450 in pasture and about 20 acres in mixed vegetable production. I designated this farm as a vegetable farm and was able to single out information pertaining mostly to the vegetable production side. All of the farmers that grew vegetables, regardless of their other crops, grew a large diversity of vegetables.

Farm Locations

All of the farms and orchards were located in Upstate New York, with only two farms outside of the Hudson Valley Region. One of the small vegetable farms was located in a nearby city and identified as an urban farm. There was one farmer who identified more as a homesteader, that was located in Western Massachusetts.

Farm Sizes

The majority of the vegetable farms had less than 12 acres in crop production. The orchards had a more uneven distribution of farm size, with the smallest orchard at 15 acres and the largest at 200 acres. Table 1 shows the distribution of farm sizes for both orchards and vegetable farms.

Table 1. Acreage in production for orchards and vegetable farms

Acreage in Production	Vegetable farms	Orchards
≤ 12 acres in production	6	0
13-30 acres in production	2	1
31-60 acres in production	0	1
150-200 acres in production	0	2

Sustainability Certifications

Only three of the farms were certified USDA organic; all of them were vegetable farms. One orchard had acquired an Eco-Apple certification, a third-party certification that requires minimal use of chemical inputs and a yearly check-in with the IPM Institute.³ Despite the lack of official sustainability certifications, all of the farmers answered ‘yes’ when asked if they thought their farms were ecologically sustainable, with the exception of one 15-acre orchard. Furthermore, the uncertified farms that self-identified as ecologically sustainable often marketed their produce informally as organic, local or natural. One orchardist posited that they were able to inform their

³ <https://ipminstitute.org/projects/northeast-eco-apple/>

customers of the quality of their produce at the farmers market without using the expensive label. Another orchardist argued that the USDA organic certification was unreliable and did not truly represent organic practices. This orchardist said that he has gone above and beyond with respect to ecological sustainability, refraining from the use of even the USDA organic approved pesticides. Many of the uncertified farms followed the organic standards almost completely but felt that there was no need to get certified.

Sustainability Practices

All of the vegetable farmers said that they used intercropping, hand weeding, cover cropping, and no-tillage or reduced tillage farming. Other practices include the use of “green manure,” general composting, refraining from the use of black plastic and the use of USDA organic approved pesticides and herbicides and crop rotation among other practices. Sustainable methods on the orchards were different from those of vegetable farms. In fact, the idea of a “sustainable” farm as opposed to a conventional one was even disputed by one of the orchardists who remarked that all orchards are inherently organic since they involve perennial, soil-building crops. Despite this comment, three of the four orchardists, including the one who made the previous comment, listed their use of Integrated Pest Management (IPM)⁴ as a means of ecologically sustainability. Only one of the orchardists did not feel strongly that their farm was ecologically sustainable; still, this farmer had been using IPM practices periodically since the 1980s.

⁴ IPM is a type of orchard management where the farmer sprays reactively rather than preventatively. In other words, rather than spraying a broad-spectrum pesticide to avoid blight preemptively, the farmer surveys the orchard regularly and only sprays when absolutely necessary (“What is integrated pest management,” n.d.).

Business Structure

Ten of the 13 farms had for-profit models while three vegetable farms operated under a larger NGO. The NGO structure enabled these farms to thrive partially on other sources of income such as donations. Although the rest of the farms had for-profit models, they were not all financially independent. There was one orchardist that was not yet breaking even despite their for-profit structure.

All of the farms marketed their produce with a mix of direct marketing and wholesale tactics, with five out of eight vegetable farmers getting at least 50% of their profits from their CSA⁵ programming. All four orchards used some combination of the U-Pick model and wholesale marketing, with the majority of acreage on all farms reserved for U-Pick.

Prevalence of Unpaid and Alternative Labor

The use of unpaid labor facilitated through sites like Workaway and WWOOF was uncommon on most of the farms and orchards. Only two of the vegetable farms utilized unpaid labor through a third-party source like Workaway or WWOOF; both of these farms were less than 12 acres in size and exclusively grew mixed vegetables. Four vegetable farms inconsistently utilized free student labor through a university program wherein a student would receive college credit in exchange for work hours. None of the orchards used unpaid labor in this form.

The use of alternative labor was somewhat more common than unpaid labor. Four of the farms hosted their own internship/apprenticeship programs; two of these farms gave full

⁵ CSA stands for “Community Supported Agriculture,” a form of direct marketing in which a group of people preorder a season’s worth of produce (or half seasons worth, depending on the arrangement) in advance of the harvest (Watson 2017).

financial compensation to their interns while the other two offered a reduced wage or a stipend as well as room and board. All four of these farms were part of larger NGOs, had been hosting interns for more than five years and had a preplanned application process.

Labor Budgets

The percent of the farm budget allocated to labor was extremely variable. Among the vegetable farms the lowest percent of budget towards labor was 10% and the highest was 75%. Among the orchards, the lowest percent of budget towards labor was 5% and the highest was 60%.

4.2 Labor needs on sustainable farms vary between orchards and vegetable farms

The interviewed farmers consistently confirmed the increased labor demand of sustainable farming. However, the vegetable farmers had overall stronger conviction and reasoning in confirming this belief.

Vegetable farmers strongly believe that sustainable methods increase their labor demand

All eight of the interviewed vegetable farms agreed that their sustainable practices increased labor costs and labor demand. This increased labor demand on vegetable farms was frequently attributed to (1) diversification of production and the subsequent lack of mechanization and/or (2) increased manual or non-mechanized weeding due to an avoidance of broad-spectrum herbicides and pesticides.

Diversification can result in the need for higher labor input

Diversification of crops on the vegetable farms emerged as a major source of increased labor demand on sustainable farms. More specifically, the inability to mechanize that is connected to increased diversification is indirectly considered the cause of such a labor increase. The farm

manager at a 70-acre farm with 30 acres in vegetables, stressed the limitations of diversification, saying that

harvest is happening by hand, whereas if we grew all carrots we could buy like a carrot harvesting machine that would harvest bin after bin after bin of carrots with minimal human input but now since we grow carrots over here and beets over here and lettuce over here, everything is getting done by hand and so that's definitely more person work than a different type of farm.

The farmer at a 4-acre vegetable operation also made the connection between diversification, mechanization and increased labor.

Our farm is very, very labor intensive, just by the makeup of all the different things that we have going on... I would assume that it is more labor intensive than your run of the mill highly mechanized conventional farm, for sure. There are 200-acre farms that run on less staff then we have.

The farmer at a 12-acre vegetable farm also showed this sentiment saying that, "if you're cropping fewer things or not caring about soil health I would imagine it's a lot more labor efficient."

The farmer of a 2-acre vegetable farm also listed the diversity of their farm as a source of increased labor; however, they stressed the idea that the increased labor from diversification is "not part of the organic piece," implying that conventional farms might also be diverse and therefore struggling from the same labor demands that stem from a diverse harvest. Despite this comment, there seems to be a common thread among the previous comments that associates a diverse crop with ecologically sustainable and organic practices.

Lack of mechanization and diversity are not inextricably linked in the perception of all farmers. Some associated the lack of mechanization with size. One farmer noted that "we're also fairly non-mechanized...we're not a big farm, we're small...we don't have a tractor...we have a rototiller but we're spreading all our mulch by hand, our compost by hand, digging our compost by hand. Everything is done by hand so that makes more labor."

The Effect of Weeding on Labor Intensiveness

Weeding was also a relatively consistent reason for farmer perception of increased labor demand on ecologically sustainable and/or organic farms. One farmer at a 4-acre vegetable operation thought weeding was particularly labor intensive on organic and sustainability oriented farms because of restrictions on herbicide use. The farmer at a 2-acre vegetable operation also stressed the labor intensiveness of weeding. When asked about what practices increase labor intensiveness, they responded, “weeds, weeds, weeds.”

Both of the aforementioned farms that listed weeding as a major source of labor intensiveness cultivated less than 5 acres of produce. However, both of the two larger vegetable farms (>30 acres), both certified USDA organic, listed weeding as a major cause of increased labor budget. The farmer at the 70 acre farm with 30 acres in vegetables commented that weeding resulted in a “huge increase” in labor even with the occasional help of tractors. The farmer at the 1,000 acre farm with 20 acres in vegetables also listed weeding as the largest labor expense related to ecological sustainability.

Other Sources of Increased Labor Demand

Farmers also mentioned that yield loss and insect scouting were cause for more labor. The farmer at a 6-acre mixed vegetable farm, noted that their lack of pesticide use results in greater yield loss which in turn, requires “larger production.” The added production to make up for yield loss was interpreted as a cause of “greater labor.” The lack of pesticide also required increased insect scouting and row cover protection. The same farmer commented on their time spent manually looking for insects and picking them off plants in order to prevent blight.

Orchardists had varying perceptions about the relationship between IPM and labor demand

The question of whether or not sustainable orchards require more labor was problematic because there are no concrete guidelines for sustainability in orchard management. There were a variety of different responses when each orchardist was asked about the relationship between sustainable practices and labor intensiveness. The practices that were most frequently brought up in association with increased labor were (1) Integrated Pest Management (IPM) and (2) lack of mechanization. However, since lack of mechanization in orchards was not directly related to sustainability, responses related to lack of mechanization will not be discussed.

Two orchardists attributed increased labor demand to their use of IPM, which requires regular monitoring and documenting of field conditions. In answer to whether or not IPM creates more labor, one orchardist at a 30-acre orchard responded,

Yes, I think it does require more labor because of things like chemical thinning.⁶ If you don't use a chemical thinner that means you need guys to go out to hand thin the apple and that's more labor. With IPM its like you react rather than prevent. If you get into a situation, I think it's definitely more labor.

This was an interesting comment because the farmer notes that increased labor occurs only when you "get into a situation," presumably meaning when IPM fails to prevent blight. The labor intensiveness of IPM was not always considered dependent on the success of IPM. For example, one orchardist at a 150 acre orchard commented that IPM was more labor intensive because of the extensive time spent scouting for pests.

⁶ Fruit thinning is a practice that involves killing buds in order to maximize fruit size. By killing a number of buds, the remaining buds will produce larger and more marketable fruit. Farmers can conduct thinning using chemical thinners such as Roundup (glyphosate) or they can do it by hand, a practice which is generally considered more ecologically mindful. Chemical thinning is usually conducted on apple trees and is generally not used on stone fruit such as peaches, plums, nectarines ("Thinning," n.d.)

The remaining two orchardists did not find IPM to be more labor intensive because of their use of labor saving computer modelling technology. One farmer at a 200-acre orchard mentioned their use of the Cornell NEWA modelling programs in order to monitor carbohydrate and irrigation take-up in the crops. When asked if and how this technology reduced labor demand the farmer responded, “Oh, absolutely. The computer modelling software takes guesswork out, whenever you’re taking guesswork out, you’re adding efficiency.” The farmer also noted their recent acquisition of a program to monitor pests in the fields, which would theoretically minimize the number of necessary pesticide applications. Interestingly, while the farmer noted that such programs require fewer “man hours,” they theorized that the cost of paying someone to manage such technology would eliminate any monetary gains from the reduced amount of manual labor. Since the farmer was using the technology themselves and was not receiving proper compensation for this work, the use of computer modelling was indeed less labor-intensive and less costly at this farm. However, when asked to comment on how such technology would affect another operation, the farmer noted,

I think that more environmentally conscious tree fruit practice have lower labor costs by man hours but potentially higher labor costs by the rate on that hour because what you end up doing is paying someone more to work with those computer models to do that detail work so it’s probably about the same but you get to do it in a more responsible way... as opposed to putting someone on a tractor at a timed interval; I’m on a higher pay grade in theory, as the manager. I am the one who is sitting in front of the computer, going out doing the surveying. So we probably eliminate about a quarter of a position by me doing this computer work but I’m spending time on a computer and in theory your expenditure for management hours is higher than an equipment operator, which since I operate the equipment too, may or may not be the case.

In other words, if a farmer were to pay a specialist to work with the computer models and equipment, the labor intensiveness would decrease but the labor cost would either increase or remain the same.

Another orchardist commented on the way that computer modelling and information services has increased the efficiency of IPM. This farmer, who had participated in the IPM pilot program in the 1980s, commenting that a Hudson Valley service could inform them of when they needed to look for certain pests, “down to the degree day.”

4.3 Unpaid labor can reduce total labor budget but alternative labor and U-Pick do not

Unpaid labor can reduce total labor budget on vegetable farms

There were two farms that utilized the unpaid labor of volunteers sourced from a combination of sites such as WWOOF and Workaway. Both farms had less than 5 acres in cultivation and hosted volunteers at least four times yearly, compensating volunteers with housing, food, informal training and knowledge sharing. These two farms had lower labor budgets than farms of similar size that did not use unpaid labor. This reveals that unpaid labor may in fact lower labor budgets.

Figure 1 shows the relationship between farm size, use of unpaid labor and labor budget.

When asked about the major benefits of using WWOOF and Workaway, one farmer answered,

Obviously help. That’s quite close to number one. Many hands make less work. It’s great to have another set of hands.

When asked whether or not their farm could remain profitable without unpaid labor, another farmer responded,

I think it would very hard for us for a number of reasons... from a practical standpoint, since we’re doing such a holistic program - other residences, converting the school bus, building a high tunnel, doing infrastructure projects, alley cropping and agro-forestry - based on all this expansion, its vital for us to have the interns... we’re investing so much in this project from the ground up totally blank slate and so we don’t have the funding. These programs are such amazing assets.

For this farmer, unpaid labor is critical for the farm to remain profitable. Additionally, the farmer introduces the possibility that unpaid labor is especially critical for farms that are just beginning or in the process of expanding. The other farmer that used unpaid labor also commented on the ability to work on “other projects” because they could delegate more routine tasks to volunteers.

Figure 1. Percent of farm budget toward labor on farms with and without unpaid and alternative labor

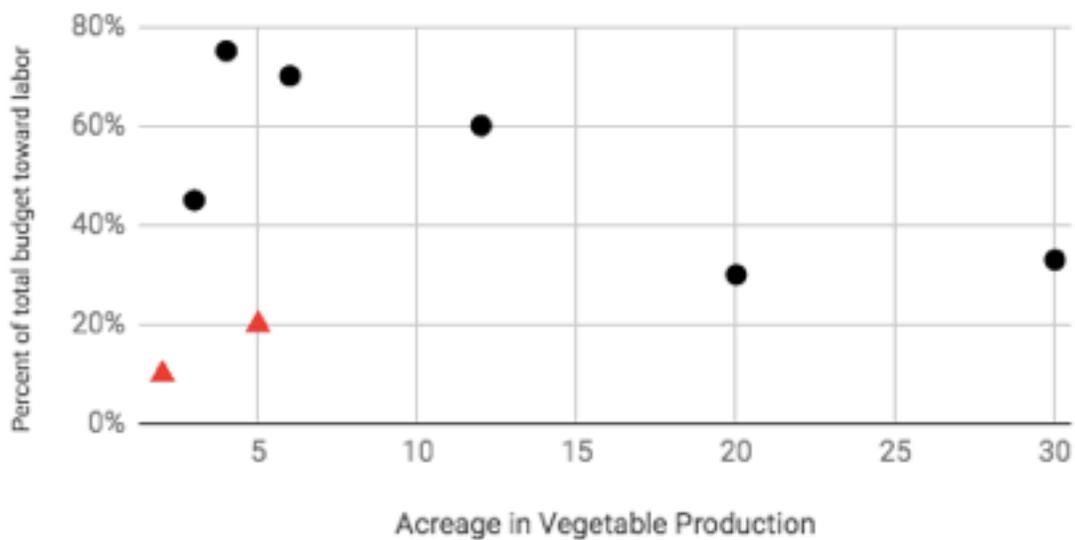


Figure 1. Percent of total farm budget towards labor on vegetable farms of varying sizes with (triangles) and without (circles) unpaid labor

Alternative labor does not necessarily reduce labor budget and may increase it.

Alternative labor is defined here as fully paid or reduced pay labor that involves an educational or training component. For the interviews conducted in this study, most of the time this involved an internship or apprenticeship program that pays minimum wage. Four of the farms had developed long-standing infrastructure to host interns and apprentices. Two of these farms belonged to a farmer-led organization dedicated to formalizing and strengthening farm

apprenticeships. All but one of the farms using alternative labor grew entirely vegetables, with the exception being a 1,000-acre farm that also grew grain and managed pasture in addition to 20 acres of mixed vegetables. The other two farms had 4 acres and 12 acres in vegetable production. Figure 2 shows the labor budget of these three farms in relation to the acreage managed. The trend-line indicates negative relationship between farm acreage and labor budget on farms that host paid apprentices.

Figure 2. Percent of farm budget toward labor on farms with apprenticeship programs

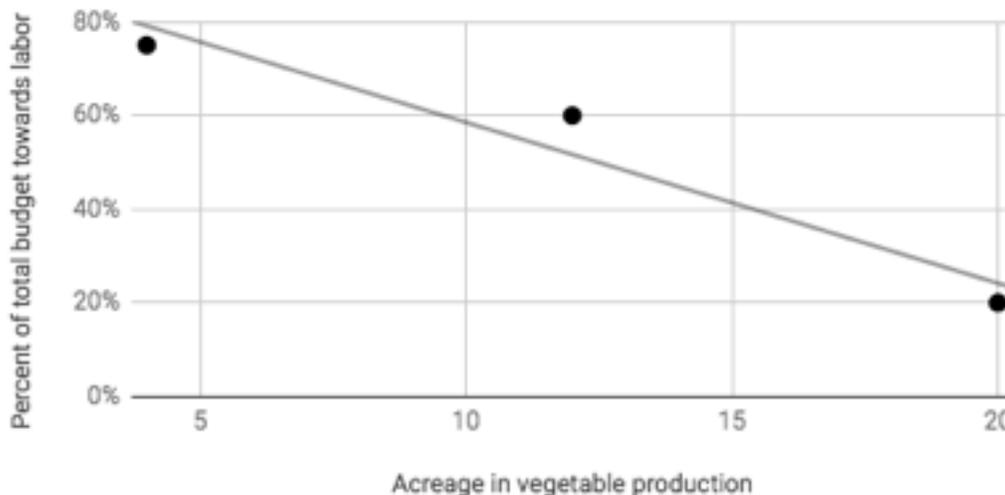


Figure 2. Percent of total farm budget towards labor on sustainable vegetable farms with apprenticeship programs

Although there appears to be a negative relationship between labor budget and farm size on farms that host apprentices (Fig 2), each of these three farms had very different motivations to use this form of labor. Regardless of their motivations for using apprentices, all of the farmers expressed that it would be more cost effective to *not* host apprentices. Even the farmer that paid their apprentices a reduced wage posited that the apprenticeship was not financially ideal. This

farmer argued that although the apprentices are paid at a reduced hourly wage, they work more hours at a slower rate because they are “new to farming and not trained.” The farmer emphasized this in an email.

Even though they are apprentices they still get paid, albeit not a lot. One could argue that they work slower because they are new to farming and need training. Therefore, the savings on hourly rate compared to a skilled employee are made up by increased hours.

In this case, the reduced wage apprenticeship is less cost effective than a traditional labor relationship. Another farm also suffered higher labor expenses because of their alternative labor relationships. This farm was a 12-acre farm that was part of a larger NGO with a mission to engage and educate the nearby community in issues relating to food and farming. Their alternative labor relationships were in the form of three fully paid internship positions, a CSA workshare program and hosting student volunteers from a nearby college who received college credit for their work on the farm. The farm manager made it clear that any losses to the farm that resulted from their alternative labor relationships was a necessary byproduct of their being a “teaching farm.” In answer to whether or not their alternative labor increases their labor budget the farmer responded,

It would probably be more efficient to just hire more employees because there is a lot more training that goes into CSA members, they’re not as efficient, they’re not as fast... but part of our mission is to educate and engage and bring in the community. Not including interns (I would count that as part of our regular). If it weren’t for CSA members and college students we would need to hire somebody else.

Another farmer who did not use alternative labor explicitly, but hired many unskilled college students during the summer season paying them a full wage, did not identify any particular deficiencies with that particular sort of alternative labor. The exclusion of their labor as alternative labor speaks to the idea that they did not see a noticeable difference in their work compared to that of regular, hired seasonal workers.

The farmer at the 1,000-acre grain, vegetable and livestock operation also supposed that their apprentices might be less cost effective than hired labor. However, the farmer also made the point that no matter what, the farm would need to hire seasonal labor, which usually requires hiring new people with differing degrees of skill and enthusiasm towards work. When asked whether or not apprentices might reduce the overall profit of the farm, the farmer responded,

Yeah, to an extent. But this is seasonal business, so you're gonna get seasonal people regardless... we've had some really good people coming through our program, the majority were into it.

Like the farmer who hires unskilled students in the summer season, this farmer is also suggesting that the cost of hiring apprentices is about the same as hiring seasonal labor.

U-Pick does not reduce the labor budget for orchards

U-Pick was also considered a form of alternative labor in this study, although the literature often did not include it as such; rather, U-Pick is often considered a form of “agritourism” (Che et al. 2005; Tew and Barbieri 2012). Indeed, the idea that U-Pick is not a form of alternative labor is was shared with most of the orchardists. Three of the farmers used U-Pick and two of those farmers expressed that U-Pick should not be considered labor, let alone unpaid labor, because U-Pick produce is sold at a reduced price. When the idea of U-Pick as a form of unpaid labor was mentioned, the farmer of a 150-acre orchard commented,

I don't see it that way ; I see U-pick as a different market. Everything in agriculture is value added. If you grow a crop that's one number, if you grow and harvest it's another, if you grow and harvest and process it's another, if you grow and harvest and process and deliver its another... before I did U-Pick I used to grow for the wholesale market. And now I price it in between wholesale/retail. The only difference is instead of paying harvest labor, we now pay someone to work a cash register and take the money in the field... so I pay the retail person and charge the person somewhere between wholesale/retail price.

Another farmer shared the same opinion, mentioning the difference in price between U-Pick produce and wholesale produce as well.

I don't consider it a form of unpaid labor, because they're picking for themselves... because U-Pick is for their own consumption. There's the fact that we don't have a picking and harvesting cost, we do not have an entry fee. If you're picking it for yourself, there's a difference in cost, and that's evaluated but that's not labor. The insurance that covers labor, doesn't cover U-Pickers so as far as I'm concerned, they're legally distinguished.

Additionally, one farmer noted that there is a social element to the U-Pick experience that renders it entirely separate from labor. The farmer likened their farm to an "agricultural park," calling U-Pick "an opportunity for the public to reconnect with where their food comes from."

The idea that U-Pick should not be considered unpaid labor is based partially on the idea that it does not make a greater profit than wholesale or other forms of direct marketing might accrue. However, there was an inconsistency with this idea when one farmer noted that U-Pick should "theoretically" be more profitable. Indeed, the farmer commented that, not accounting for damaged and dropped produce (which accounts for 20-35% of the U-Pick acreage), U-Pick acreage should be more profitable because it does not require as much labor.

Labor is very expensive. So when you put someone to pick the fruit or bring it in and then pay someone else to pack it, pay someone to put in on a shelf or take it to a store, by having the U-pick out there, you're essentially reducing handling by 2 to 3 times so you get more return which makes up for that 20-25% (in all honesty, 20% is very conservative, if it's loose on the tree, it's not uncommon to see 30 -35% on the ground) but since you don't have all those costs you still sometimes seeing a little better return than if you had picked it, packed it, and sent it somewhere.

In this quote, the farmer says that U-Pick is more profitable because it is less labor intensive; however, he also questions this conclusion because of their failure to account for U-Pick losses. Nonetheless, their idea that reduced handling results in greater return is in direct opposition to that of the other farmer who argued that because the cost is value-added, there is no difference in profit between wholesale and U-Pick produce. The difference of opinion can likely be attributed to minor differences in the interpreted cost of handling.

4.4 Farmers value skilled, long-term labor relationships

Farmers that did not use unpaid or alternative labor often connected their non-participation to the fact that they value skilled, long-term labor, indicating that they did not associate those qualities with unpaid or alternative labor. These farmers are generally in the midsize range. One midsize, 70-acre farm with 30 acres in mixed vegetables, confirmed the superiority of skilled farm labor estimating that

a skilled farm worker is probably three times as productive as unskilled farm worker and it's well worth paying a good wage to have that benefit.

The farmer also commented that using the unskilled labor of CSA members or WWOOFers would "not be a good business move," responding that a farm of their size would not benefit from such work.

when I was a smaller farmer, I'm gonna be out there weeding and if some random person wants to come and help me, they can work next to me and I can show them what to do and if they're good, than great and if they're super slow, then no skin off my back. And now its like I would have to put them on a team with these people and they'd have to show them through stuff; it's not as logistically feasible and helpful.

The connection between farm size and interest in unpaid or alternative labor is evident in the fact that the farms that do engage with such programming are usually small, with the exception of the 1,000-acre farm with 20 acres in vegetables. To be clear, this farm hosted an apprentice for each division of the farm, including the produce division. Another farmer, at a 150 acre orchard also testified to the value of long-term, skilled labor positing that,

the employees that become most valuable are the ones that are with you for a year, because only then do they get it, an idea of what the full process is and a sense of what agriculture is actually about rather than just the specific tasks. You really can't tell from the small window what agriculture is actually about.

The 500-acre vegetable and livestock operation also expressed that skilled laborers who have a history of farming are more efficient than alternative laborers.

If you get somebody who is a skilled laborer, who is a master at their thing, they're gonna find efficiencies, versus the apprentice, that's part of the learning...in the repetitiveness you learn efficiencies to make it faster and more productive, for example killing birds [chickens], I've done

it for 20 years, I can do it much faster than a kid who is just learning, just cause I know the touch and feel, the way the machines work...

Experience and skill are considered attainable only over long periods of time; the learning of farm skills is an endeavor of repetitiveness that cannot be learned over the course of one apprenticeship or internship.

Even the farmers that used unpaid or alternative labor recognized the deficiencies associated with it; namely, that the workers are unskilled because of their lack of experience in the field. For example, the farmer at the 4-acre vegetable farm that uses Workaway and WWOOF among other outlets, said,

I would assume slightly better quality of paid labor...there is a little more accountability for someone whose being paid; if they're just an intern they might not show everyday.

The farmer at the 12-acre non-profit vegetable farm with fully paid interns and a CSA workshare program also confirmed this sentiment saying that,

it would probably be more efficient to just hire more employees because there is a lot more training that goes into interns...they're not as efficient, they're not as fast

Both of these farms functioned as part of a larger NGO with an educational mission. The increased labor budget of their farms is therefore a necessary byproduct of providing educational opportunities.

Alternatively, most of the farmers did not consider unpaid and alternative laborers as completely unskilled. There was one farm that hosted volunteers from Workaway and WWOOF that did not consider unpaid labor to be synonymous with unskilled labor.

Some people are really good at following directions, sometimes I've had WWOOFers that are better at some things. But I think most people will be good at most things as long as they get the right information and get some practice... it's not so much about being paid or not paid, it's just about what skills they bring.

This farmer made an interesting distinction between payment and skillfulness, implying that volunteers might be just as skillful as hired labor. Indeed, the idea that some volunteers and

interns are more valuable and efficient than others came up frequently, even among farmers that concretely believe in the superior efficiency of paid labor. One farmer described their application process, revealing that they selectively find interns that are more skilled.

Over time with our internship application we've become much more savvy in terms of how to train and who were looking for when we do that interview. We choose people that have previous farming experience.

The practice of selectively choosing your unpaid workers to find more skilled and reliable participants might remedy the inefficiency of unpaid labor in the same way that interviewing a potential employee ensures a degree of productivity.

4.5 Interest in unpaid and alternative labor is related to legal and ethical arguments

Farmers that did not use unpaid or alternative labor expressed that they were concerned about the legal and ethical implications of fostering such relationships. One farmer bluntly summarized the federal law regarding unpaid internships.

The law is, and fairness dictates, that you need to pay people to do work. So I think the federal definition of an internship is if you're not doing something that is economically beneficial to the business than it can be unpaid, but only if you're really just teaching. The farmer would have to just be in a teaching role, not in the role of putting someone to work.

Another farmer referenced their knowledge of other farmers who have abused the title of "intern" and "apprentice" in order to have free labor.

While I totally respect apprenticeships and formalized opportunities for people to trade their labor for an education I feel like a lot of farms use terms like intern and apprentice to get labor and not really provide a proper education in exchange. So, we've always been very conscious to not refer to our employees as interns we call them crew members because it's a job.

Another farmer who had been a volunteer through WWOOF on two different farms noted that they "see a lot of exploitation with the WWOOFing program."

Other farmers were aware of more specific legal constraints. One vegetable farmer and two orchardists mentioned that they were legally unable to use interns or volunteers because of

their use of the H2A⁷ worker program. These farmers understood that the H2A program prohibits anyone from doing the same agricultural work that H2A workers do without the same amount of pay. According to one farmer, this law was meant to ensure that H2A workers were not occupying higher paying farm jobs that might be done by U.S. citizens.

Legal and ethical issues associated with unpaid and alternative labor were often complicated by the idea that farmer training involves farm work. All of the farmers that used alternative or unpaid labor regarded farmer training as something that inherently involves hands-on farm work. Indeed, all four internship programs consisted mostly of farm labor. Even the two farms that were part of the coalition of farms interested in formalizing apprenticeships were primarily educating their apprentices through farm work. The program involves weekly lectures and farm visits; however, the apprentices spend a majority of their time learning through farm work on their respective farms. Another farmer with an apprenticeship program argued that repeating farm tasks is “part of the learning...in the repetitiveness you learn efficiencies to make it faster and more productive.” One farm manager who had attended school for agriculture and had been an unpaid farm apprentice noted that their experience as an apprentice was more valuable than her traditional education at school. Reflecting on both experiences, the farm manager said, “interning or apprenticing on the right kind of farm, even if [you’re] getting paid not well, is probably better than going to farm school.”

Farmers that did not engage with alternative or unpaid labor also recognized the necessity of incorporating farm labor into farmer training. When prompted with the idea of farmer training

⁷ The H2A program is a governmental program that facilitates the use of temporary agricultural workers to farms that anticipate a shortage of domestic workers on their farms (USCIS 2019).

without labor, one farmer asked, “how would that even work?” Indeed, farmer trepidation about farmer training involving unpaid or alternative forms of work is therefore not without complexity.

4.6 Farmers are interested in the social benefits that unpaid and alternative labor might offer

Most of the farmers engaged with some kind of alternative labor, whether it was unpaid or not. One orchardist, for example, hosted students from eastern Europe for one summer, paying them minimum wage in exchange for their farm work. Another small farm with no intention of engaging in alternative labor programming infrequently hosted casual volunteers at their behest. Even those farmers that did not explicitly or consistently engage with alternative labor recognized the social and community value of including non-hired workers in their operations. The social value of alternative labor the farmers commented on came in two forms; (1) the educational and community service value of alternative labor and (2) the fostering of close friendships and emotional support outlets.

Educational Value of Alternative Labor

All of the farms that engaged with alternative labor were interested in the educational component of it. The educational value of alternative labor came in two distinct forms. The first type was focused on educating individuals, that is, hosting long term, on-site volunteers or interns in an effort to give them some sort of practical knowledge. The second element of educational value was the community service and outreach component on some farms. Community service and outreach was often motivated by larger, sometimes ambiguous movements. For example, one farmer noted that their CSA work-share program was part of their larger effort to have people

become more in touch with where their food comes from; this might be considered part of the greater 'local food movement.'

Many of the farmers involved with alternative and unpaid labor were interested in the educational component of it and saw education as a primary component of their mission. All three of the NGOs had dedicated education departments. Two of the farms belonged to a group that works towards formalizing and bettering farm apprenticeship programs. The group organizes lectures and farm visits on the East Coast for the participating apprentices in an effort to diversify their learning experience. Another farm with an internship program stated

The primary thing is training in this kind of very specific agriculture, small scale and regenerative agriculture, permaculture methods and organic methods, getting training in how to do minimal tillage farming; and then the second piece, is giving training and experience in homesteading, learning skills in self-sufficiency in preservation and natural building.

The farm's official mission is to "provide a space for the teaching and practice of sustainable skills."

Farmers without explicit educational programs also claimed that education was a central facet of their operation. One farmer that used Workaway and WWOOF and had a short history using a NOFA internship noted that their treatment of unpaid volunteers was the same as that of their interns.

The same thing with volunteers if somebody wants to learn - most people do - we're gonna teach it, it's just part of it. I'm gonna be teaching things all the time any way... regardless of the title.

This farmer introduced the idea that apprenticeships and more informal volunteers get a similar if not the same, educational experience, just by virtue of conservation.

Some farms and farmers are more suited to alternative labor

While many of the farmers cited the educational value of alternative and unpaid labor, they also expressed that such labor is not always suitable. One of the farmers who did not use unpaid

labor stressed that apprenticeships that are organized, with a person dedicated solely to the education of apprentices are ideal.

The places who I think do it well have like curricula in place so that when you go in to it, they have everything laid out. They maybe have a person whose job is to be an educator. And they have like scheduled time or opportunities to learn as opposed to being like “you just gotta work hard all the time and you’ll pick up things as you go. That’s not an education to me. So, you know places like P- farm or P- farm, they have a really formal model and are doing a good job.

Many of the farmers that used unpaid and alternative labor validated the educational quality of their programs based on (1) their own teaching ability, disposition and personality and (2) the unique qualities of their farm such as farm size and the use of complex practices.

The role of farmer personality and teaching ability was cited as a major criteria in justifying educational programming. One orchardist did not use unpaid or alternative labor but was considering partnering with a nearby school to offer internships; this farmer felt especially conflicted about their ability to educate and train apprentices or interns.

You have to grow up with an educational background so that you know how to teach other people. I’m trying to be better at training; I always feel like people will learn through osmosis. I just don’t think we’d be good at it.

Another farmer at a 6-acre vegetable farm also doubted their ability to execute the dual role of educator/farmer.

I don’t think education is my primary strong point, so I don’t want to half ass. So, I guess because of that concern and because I don’t see myself primarily as an educator, I don’t see that we would move towards that model. I do like the idea of workshare type relationships with people.

The importance of the farmer being particularly good at filling a teaching role becomes an important qualifier for these farmers. Another farmer jokingly referenced the well-known farmer and author Joel Salatin as a stellar example of a suitable farmer/educator.

Other farms argued that farm demographics influenced their decision to become teaching farms. The farmer at the 500-acre livestock, grain and vegetable operation argued that their

comparatively larger size gives their apprentices the advantage of experiencing the working environment of a truly commercial farm.

It gives people real farm time... we're a large scale farm, you're not gonna see four cows, you're gonna see 150 cows. You get to really learn...

Alternatively, another farmer stressed that their smaller size makes it a suitable training ground for a specific kind of small-scale, regenerative agriculture.

The primary thing is training in this kind of very specific agriculture, small-scale regenerative, permaculture methods and organic methods, getting training in how to do minimal tillage farming...

The farmer training at this farm is of a completely different style considering the type of methods they use. Indeed, the latter farmer also stressed that they tried to teach homesteading skills as well, which is associated with smaller scale, more community-based agriculture. Therefore, both farmers are filling different but equally vital roles in terms of farmer training.

Community Service

Many of the farmers that used alternative labor were interested in contributing to and participating in larger movements. One farmer justified the inefficiency of alternative labor by arguing that it is a necessary sacrifice in service of the farm's educational mission.

They're not as fast, they're less efficient but part of our mission is to educate and engage and bring in the community.

Another farm with an internship program emphasized that providing a community space at the farm was just as important as producing food.

We're always gonna maintain this internship program. This is a really core tenet of what we're doing, this is always a piece of our work, just as important as providing vegetables is providing this community space.

The 'community space' idea goes beyond the purpose of farmer training; it is more ideological and life-style based than other more skills based alternative labor.

Friendship and Emotional Support

All of the farmers, that regularly engaged with unpaid and alternative forms of labor, expressed that the central point of the experience was to connect with people, not necessarily to receive free labor. Some noted that their involvement or interest in alternative labor was partially self-serving in that alternative labor can be fun. One orchardist who hosted interns from eastern Europe for one growing season also attested to the non-monetary value of alternative workers, noting the value of their personalities rather than the value of their work. When reflecting on the experience they said, “it was fun, they were good people.” The same orchardist was also in support of U-Pick because of its ability to reintroduce younger generations to food production. Another farmer with little formal interest in alternative labor expressed the social value of their weekly volunteer from the local area. In reference to the volunteer, the farmer said,

I don't think of our volunteer as labor I think of her as a part of our farm family. I think there's a nuance there but I can't exactly explain the difference... She's just a great person, such a pal of the farm.

One farmer, on the one-acre USDA organic farm, had been using unpaid labor since 1999. When asked whether or not their operation would be profitable without unpaid labor, the farmer responded,

I would like to keep having volunteers, we like having volunteers. Not necessarily just for the work and for the profit part. It really has a lot to do with people, and connections we've made with people.

One vegetable farmer who has never used unpaid or alternative labor said it might have been “fun and interesting” to have WWOOFers, indicating such programming is attractive for its' social value.

The idea of alternative workers providing emotional support to farmers also came up as a core reason for having alternative labor programming. When listing the reasons for using their

unpaid internship program, one farmer said, “the aspect of morale and community keeps me motivated.” Similarly, another farmer using WWOOF and Workaway mentioned how their volunteers remind them of how important their work as a farmer is.

Affirmations and support. Because people that are volunteering are often so supportive of what we’re doing. Often, we forget that we’re fulfilling this important part. It’s activism, you kinda forget because you’re caught up in the weeds and seeds. It’s like a pat on the back. They’re giving us emotional support as well.

Another farmer noted the self-motivation aspect of hosting apprentices, commenting on the value of revisiting the “why you’re doing this, how you’re doing this, why it’s more sustainable.”

Another farmer noted the importance of community and shared lifestyle serves as motivation for their work.

One thing that stands out is the community aspect. I don’t necessary want to do this work alone so much more encouraging to be doing it with community, with eager young students who want to learn and participate in this lifestyle. It’s not just a profit mechanism, it’s the lifestyle that we’re sharing.

In addition to friendship and company, alternative labor clearly provides a sense of emotional support, especially for those farmers on sustainability or activism-oriented farms.

Another form of personal gain was in the form of innovative thinking and knowledge sharing. Some of the farmers that used alternative labor mentioned that their workers often brought skills and ideas that positively innovated the farm or influenced farm decision making.

The apprentices are eager to learn, some of them have studied and you learn from them...new ideas, they’re innovative, they have a lot of drive and passion.

The two farmers that used WWOOF and Workaway also noted that their volunteers often offered valuable skills outside of farming, namely building skills.

Chapter 5: Discussion

5.1 Consistencies and inconsistencies in the literature regarding the relationship between sustainability and labor intensity.

This study aimed to analyze the role of unpaid and alternative labor on small, sustainable farms in an effort to understand how such labor might address the increased demand for labor that is required by sustainable systems. The importance of studying this niche of labor rested on the popularized claim that sustainable farming requires more labor. This foundational claim was supported by all the interviews with farmers, both on vegetable farms and orchards. The increased demand for labor on the vegetable farms was primarily attributed to (1) the intensity of weed management and (2) the spatial complexity of the systems. The correlation between intensity of weed management and increased labor demand is consistent with the existing literature (SARE 2003, Pimentel et al. 1983); in both the literature and the interview responses, restraint from the use of herbicides and pesticides was considered the root cause for increased weeds. The literature that correlates the spatial diversity of crops found on the interviewed farms (e.g. alternating rows of three different vegetables versus three concentrated plots for each crop) with increased labor demand is not as prevalent. In fact, while there is evidence that spatial crop diversity results in a lack of mechanization which thereby causes increased labor intensity, there is also literature to the contrary that suggests that spatial crop diversity might inadvertently decrease labor intensiveness by providing natural weed management (Pretty et al. 2018; Altieri 1999). Indeed, Altieri (1999) writes that by providing ecosystem services, polycultures facilitate “efficient use of labor.” The interviewed farmers in this study were largely addressing the former idea about mechanization from diversity increasing labor; they did not mention the possibility of

natural weed management. Indeed, while there is some evidence that diversity offers ecological services that decrease labor intensiveness, much of this literature refers to temporal diversity (i.e. cover-cropping, crop rotation, planting of habitats for beneficial insects) on large-scale field crop operations. For example, in a study of field crop farms, Davis et al. (2012) found that the farms that employed intensive crop rotation were just as efficient at suppressing weeds than the conventional farms that used synthetic herbicides.

The relationship between labor intensity and sustainability in orchard management was also similar between the literature and the interview results. The increased labor demand was primarily attributed to the use of IPM; specifically, the amount of time necessary to manually conduct pest scouting (MacHardy 2000; Jones et al. 2009; Badiu et al. 2015). The idea that technology might reduce labor demand but increase costs was also a theme in the literature and the present study. Indeed, Badiu et al. (2015) found that farms can substitute technology for labor, albeit incurring a higher production cost. This is consistent with the narrative of one of the orchard managers, who theorized that their use of digital monitoring and scouting technologies should increase their total production cost despite fewer “man-hours” expended. The reason they could not soundly testify to this occurrence is because they had been managing the technology without formally compensating themselves as they would a hired employee.

Other factors, such as farm size, are often considered in the literature as an indicator of labor intensity on sustainable farms. A recurrent finding is that small organic farms have been found to be more labor intensive than larger organic farms (Morison et al. 2005; Seufert et al. 2017; McDougall et al. 2018). Indeed, in a survey of more than 1,000 organic farms of all different sizes and crop compositions in the UK and Ireland, Morison et al. (2005) found that

vegetable and fruit farms with 5 hectares (about 12 acres) or less in production required the most about of labor per unit land area. The farms in this study that were 12 acres or less in size did have higher labor requirements than the larger farms (Figure 1); although, the farms with unpaid labor are excluded from this statement since the labor intensity was measured in terms of budget. However, this comparison is weak considering the small sample size of this project and the uneven size distribution of the farms.

5.2 The economic value of unpaid and alternative labor is dependent on farmer motivations and circumstances.

The existing literature frequently depicts all forms of unpaid and alternative labor as an economically beneficial, sometimes integral part of small, organic farming systems. For example, Ekers et al. (2016) conducted extensive interviews with interns, apprentices, volunteers and their overseers at small and midsize sustainable farms in Ontario and they found that the free labor provided by these unconventional relationships in combination with “off-farm income and self-exploitation” solves the “labor challenge” on many “ecologically-oriented farms.” In a study of Virginia farmers who hosted apprentices, MacAuley and Niewolny (2016) reported that 73% of participating farmers considered apprenticeship labor a “very important” motivation to use on-farm apprentices. Similarly, and perhaps most unsurprisingly, studies of WWOOF labor also confirm economic benefits of unpaid labor. A survey of WWOOF farms in Canada, Ord and Amer (2010) found that more than one-third of the participants considered volunteer labor an indispensable part of their farming operation, without which, they would not be financially viable.

The economic value of unpaid and alternative labor expressed by the participants of the present study varied depending on the type of labor used. Interns and apprentices were generally not considered economically superior to hired labor. In fact, the use of intern and apprentice labor was sometimes considered a *source* of struggle rather than a *solution* to it. Indeed, the four farmers who used interns and apprentices mentioned the inefficiencies of such labor; namely, the amount of training and supervision required and the occasional unreliability of the interns and apprentices. Even the two farmers that did not pay their interns noted that using hired labor would be more a more efficient practice. The lack of emphasis placed on the economic benefits of alternative labor perhaps stemmed from the fact that most of these farms were part of larger NGOs in service of educational mission. Additionally, two of the farmers that used interns were farm managers and not farm owners, with no immediate financial stake in whether or not the alternative labor was more economically viable than using hired labor. Regardless of the performance of the farm, these farm managers received the salary promised to them. Given the small sample of farmers that had unpaid or reduced wage apprentices and interns in this study, the comparison across studies may not be entirely sound. The interviewed farmers that did find economic value in unpaid and alternative labor were the two farms that employed completely unpaid volunteer labor through WWOOF and Workaway.

The disparity in responses between farmers that used volunteer labor (e.g. WWOOF and Workaway) and farmers that used intern and apprentice labor might be attributed to the fact that WWOOF farms are more often in their beginning stages or they are struggling financially. Indeed, all of the farmers, even those that did not use volunteer labor, argued that unpaid and alternative labor might be more economically beneficial to fledgling farms and beginning

farmers. The idea that new farms and farmers might be more suited towards such labor is in agreement with the literature. Indeed, MacAuley and Niewolny (2016) suggests that unpaid and alternative labor is a way for beginning farmers to overcome the overwhelming barriers to entry in organic farming. Terry (2014) writes that “WWOOFers can be a positive force in growing the productive capacity of farms,” indicating that the economic value of WWOOFers is most potent during the growth phase of the farm. Indeed, the two farmers that used WWOOF extensively mentioned that having WWOOFers enabled them to work on other projects that might expand and better the farm in the long-term. Additionally, the homesteader, who was still building their homestead and accompanying garden, said that they were using Workaway in order to expand their operations.

5.3 The social value of unpaid and alternative labor is undisputed by farmers but may be legally and ethically unsound.

The social benefits of unpaid and alternative labor are undoubtedly an important motivation for farmers that use unpaid and alternative labor; this is a common theme in both the literature and the present study. In a content analysis of their survey of WWOOF farm hosts in Canada, Ord and Amer (2010) found that “learning opportunities” was the most mentioned reason for farmer engagement with the WWOOF program, with “actual labor” coming in second. Indeed, they found that the mention of social benefits such as “social interaction,” “skills exchange” and “general life enrichment” were just as prevalent as mention of free labor. While all of the interviewed farmers in the present study mentioned some variation on “skills exchange” or “learning opportunities” as a benefit of unpaid and alternative labor, the “social interaction” and “general life enrichment” benefits were emphasized only by the two farms that use WWOOF; the

other farms said little about the emotional support aspect of alternative labor. This might suggest that the emotional benefits of unpaid and alternative labor are more important in volunteer labor situations rather than intern and apprentice arrangements.

Although there is considerable social value in the use of unpaid and alternative labor, the issue of fairness and legality were mentioned by the interviewed farmers as deterrents to their use of it. Such hesitation is perhaps warranted because of the recent increase in government regulation of internships. In the last 10 years, farms in Oregon, Washington and California have been penalized for improper use of the internship model (Kalyuznhy et al. 2012). In one notable case, David Retsky, a first-generation farmer in California, was fined \$18,000 for using interns extensively although he paid their interns a \$300 stipend as well as providing them room and board. The Retsky case among others have reportedly dissuaded other farmers from hosting interns on their farms (Kalyuznhy et al. 2012).

Laws regarding unpaid internships exist on the federal level in the form of a seven-part test called the “primary beneficiary test” (Fact Sheet #71, 2018). However, states may separately make additions to the federal criteria. In Washington, for example, farms that gross less than \$250,000 a year may host unpaid interns (Kalyuznhy et al. 2012). In California, the state only allows unpaid internships when they are situated within a larger university program; these kinds of internships often result in more work for the farmer involved and have therefore prevented some California farmers from engaging with internships (Kalyuznhy et al. 2012).

In New York, internship law is fairly stringent. There is an extensive “intern/trainee exception test” that includes eleven criteria. While some of these added criteria are extensions of the federal six-part test, there are some that are almost entirely independent such as the rule that

intern employers do not advertise their internships as jobs and the rule that skills learned in the internship should be applicable to a similar operation in the same field. Another notable addition is the restriction of unpaid internships at nonprofits; the federal laws state that such internships are “generally permissible” while the New York State law is more stringent (NYSDOL 2016; Cooper et al. 2018).

Among the eleven New York State criteria, the most restricting is likely the requirement that the farmer host does not directly benefit from any unpaid internships. This is a rule that is also found in the federal test. Indeed, the New York Minimum Wage Act states that “the employer who provides the training derives no immediate advantage from the activities of the trainees or students and, on occasion, operations may actually be impeded (NYSDOL 2016).” While there are few publicized cases of New York farmers being fined for their misuse of intern labor, the interviewed farmers did express trepidation in regards to the legality of internships. One farmer cited the recent crackdown on farm internships mentioned above as a reason why they avoid intern labor. Another farmer on a small 6-acre vegetable CSA farm cited the federal law as a reason to avoid intern labor.

Part of the controversy surrounding the legality of unpaid farm internships is the unrealistic distinction between intern work and trainee work. The core difference between paid intern work and unpaid trainee work is that paid interns commit a full day of “agricultural work,” which is defined as repetitive, redundant, manual tasks such as planting and harvesting (Fact Sheet #71, 2018). Unpaid trainees, on the other hand, receive an experience akin to “vocational school” without providing any benefit to the farmer to the extent that the farmer might even be impeded by the trainee (Fact Sheet #71, 2018). The issue lies in the fact that many farmers view

“agricultural work” as an important and even major part of farmer training (Kalyuzhny et al. 2012; Wood 2013). For a farm educator to avoid deriving any immediate advantage from a trainee program would be extremely difficult considering the idea that farmer training inherently involves farm work.

The interviewed farmers testified to the inevitable co-mingling of farm labor and farm training. Most of the interviewed farmers that offered farmer training or education suggested that they used a “learn by doing” model. One farmer that used the WWOOF program as well as interns occasionally said that teaching “is just part of it, I’m gonna be teaching things all the time anyway...I don’t like that term paid and unpaid because people who are volunteering they’re getting paid -- in education, in food, in housing, in connection with a lifestyle-- that’s a payment.” Even the farmers that did not use unpaid or alternative labor wondered about muddled differentiation of farm labor and farmer training; “I don’t even know how that would work... because the way you learn is by working,” said one farmer in response to the idea of farmer training without farm labor. This farmer even posited that the paid seasonal positions he offers are akin to unofficial training positions, admitting that he “call[s] it a job, but when we’re hiring people with less experience, it’s kind of a training position that receives a training wage.” The idea that farmer training is a “learning by doing” experience is evident in the farmer histories as well. With the exception of two young farmers, all of the interviewed farmers did not attend “ag school” and attributed their training to a combination of previous jobs and the act of starting a farm. Indeed, all of the farmers with the exception of two young farmers testified that their farmer training was something they mostly acquired as they built their farms, the ultimate act of “learning by doing.”

The lack of distinction between farmer training and farm labor is cited by academics as a reason for the reevaluation of what should be considered a legally sound unpaid farm internship. For example, Kalyuznhy et al. (2012) cites this sentiment in a paper titled, “Why Farming Internships Should be Legal.” The authors stressed that internships allow aspiring farmers to learn the practical skills “necessary to farm successfully,” and that without them, “many new farmers would likely not survive past their first year.” This high-stakes claim is rooted in the anxious anticipation of a new generation of farmers with little farming knowledge. However, what Kalyuznhy et al. (2012) fail to mention is the existence of farming internships that are not intended for the purpose of training future farmers. Indeed, as many of the interviewed farmers in this study suggested, interns and apprentices are more often than not motivated by an interest in food systems and sustainability from an activist perspective, and do not have serious plans to become farmers.

Another issue with confounding the legal distinction between the paid interns and unpaid trainees identified in the literature is that under the law, farmers have little incentive to host farm trainees. Kalyuznhy et al. (2012) write that the six part test essentially requires that farmers altruistically train interns at the expense of their own efficiency, which is not pragmatic for managing a for-profit farm. The issue with this argument is that there are farms that host paid interns and apprentices for altruistic reasons. Indeed, the two of interviewed farmers who paid their interns a full wage suggested that their operations would be more efficient with hired labor; however, these farms were part of larger NGOs with missions strongly rooted in education rather than financial performance. The prevalence of paid internships offered by NGO affiliated farms could therefore be studied in order to gauge whether or not federal and state restrictions would

truly deplete the well of farm internships. Additionally, the importance of a for-profit element in truly educating interns that hope to be future farmers affects the importance of unpaid internships on for-profit farms.

Social Movement Participation

A common theme across the interview responses was the belief that the use of unpaid and alternative labor contributes to social movements relating to sustainability, regenerative farming and self-sufficiency. Activist farming or farming with the intention of contributing to a larger public movement has been considered problematic by some. Julie Guthman argues in a thought-piece published in 2017 that unpaid and alternative labor “does little to bring about bio-political recognition for traditional farmworkers, other than remind employers that paid employees are more reliable and better trained” (Guthman, 2017). Guthman is not arguing against the idea that such labor contributes to sustainability movements like “farm to table” or the “foodie” movement as she calls it; rather, she is bringing to light the idea that such labor romanticizes farming in a way that is not in solidarity with the actual working conditions for long-term, predominantly undocumented laborers, who comprise most of the U.S. farm worker force, even on organic farms (Guthman, 2017). She writes, “theirs [the unpaid workers’] is not a politics of solidarity.” Indeed, Wood (2013) also argues that farm interns that accept the unfair conditions of their internships contributes to the acceptability of socially unjust paid labor. Wood writes,

The rationalization employed by interns to justify their self-sacrifice for alternative benefits fails to correct the inequitable distribution of resources and power in the labor process on farms that require outside labor to meet production demands. The intern’s commitment to learning sustainable farm practices alongside farmers who are stewards of natural resources must not come at the sacrifice of equitable social relationships and fair labor practices on sustainable farms.

Considering this viewpoint, it is not enough for farmers to host unpaid or reduced wage laborers in service of an ecological sustainability mission; the unfair treatment of “willing white workers on organic farms” as Julie Guthman dubs unpaid WWOOFers and interns, is detrimental to the *social* sustainability movement on organic and alternative farms despite its service to *ecological* sustainability movements.

Most of the results from the aforementioned papers were reached using responses from farm interns or the alternative laborers themselves. Although farm interns and other alternative laborers were not interviewed for this project, the farmers that were interviewed were not readily aware that their programs might be reinforcing and justifying socially unjust practices. Indeed, farmer awareness of the potential for perpetuating problematic labor paradigms was virtually nonexistent. There was little to no explicit mention of the idea that their selective contribution to sustainability movements might be detrimental to social justice movements. Alternatively, mention of social injustice was sometimes reserved for the farmers’ themselves. For example, one orchardist did bring up the concern that alternative laborers would promote the idea that farming is inherently low-paying for the farmer. The orchardist said,

Farmers are already expected to not make any money so I don’t want to start people off as an intern thinking that they’re not gonna make any money, it’s hard enough already. I hope that in my day I see that farmers are allowed to make a little bit of money and not feel bad about it. God forbid a farmer makes money.

The farmer goes on to describe a fellow farmer nearby being shunned by other farmers for having built a luxurious new house. This quote might represent more of a concern with the overall lack of profitability in farming, rather than concern about farmworker injustice. In fact, variations on the idea that “it’s hard enough already,” are sometimes mentioned in the literature as the reason why sustainable farmers are largely *not* in support of including a social standard in

organic certifications. Indeed, in a series of studies conducted on organic farms in California, Shreck and Getz (2008) found that “a stunning majority” of the organic farmers interviewed were not in support of incorporating a social justice accountability standard in the USDA organic certification; the rationale for this was largely attributed to the idea that farmers are barely scraping by themselves and cannot reasonably carry the torch for farmworker justice. As the primary educators of interns, apprentices and volunteers, farmers may reinforce the conviction that they cannot be accountable to reform the injustices suffered by farm laborers.

Conclusions

This paper has explored the idea that the increased labor demand on sustainable produce farms is sometimes addressed by using unpaid or alternative forms of labor. Much of the existing literature finds that unpaid labor, namely in the form of internships and apprenticeships, is often critical to the survival of small, sustainability-oriented farms. Alternatively, my research found that only a minority of the farmers viewed their unpaid or underpaid laborers as particularly labor saving; those that did value their unpaid laborers for economic reasons were uniformly for-profit farms. Regardless of how integral unpaid laborers were to the functioning of the farms, all of the farmers stressed that they were more interested in reaping the social benefits of alternative labor rather than the economic benefits. These social benefits include but are not limited to: emotional support, the dissemination of sustainable farming ideas and knowledge sharing.

The social benefits of unpaid and alternative labor are sometimes considered problematic. The legality and ethics of unpaid or alternative labor were mentioned frequently as deterrents. Much of the discussion surrounding the ethics of unpaid and alternative labor was centered on the idea that farmer training inherently involves farm labor. In fact, the dissemination of sustainable farming ideas as well as other social movement platforms that push values such as self-sufficiency and localism, neglect and even detract from the movement toward labor rights.

The legal concern about the potential exploitation of unpaid and alternative labor is certainly warranted considering the occasional exercises of abuse that have been documented recently. However, preventing all farmers from using such labor would undermine a significant form of farmer training in the U.S. Therefore, the implementation of the law should perhaps adopt a checks and balances approach rather than a general ban. The Washington internship law

that allows unpaid farm internships on farms that gross less than \$250,000 a year is perhaps a suitable approach. This approach helps ensure that it is mostly small farmers that utilize such an asset and that the farm is small enough that the farmer would be capable of dedicating adequate time to alternative labor programming. Another solution might be to require that farms with internship programs belong to a larger organization such as CRAFT in the Hudson Valley, a coalition of farmers that work to provide their apprentices a well-rounded farm experience that involves both classroom time and field work. Alternatively, as mentioned in the discussion chapter, there might be ways to make sustainable farming less labor intensive by tailoring diversification techniques and implementing “ecological weed management.” Until there is sufficient research to begin widespread adoption of such techniques, the use of unpaid and alternative labor must be addressed. Considering the debatable economic contributions of unpaid and alternative labor at small sustainable farms and the many social services that such labor provides in the way of farmer training and community building, the laws regarding unpaid and alternative labor are perhaps too stringent.

References

- Altieri, M. A. (1999). The ecological role of biodiversity in agroecosystems. *Invertebrate Biodiversity as Bioindicators of Sustainable Landscapes*, pp. 19-31.
- Badiu, D., Arion, F., Muresan, I., Lile, R. and Viorel Mitre. (2015) Evaluation of Economic Efficiency of Apple Orchard Investments. *Sustainability*, Volume 7, 10521-10533
- Bechtel, Wyatt. 2019. "Organic Price Premiums Dip as Demand Grows, Choices Multiply." *AgWeb Powered by Farm Journal*. Retrieved on April 25, 2019, from <https://www.agweb.com/article/organic-price-premiums-dip-as-demand-grows-choices-multiply/>
- Berry, W. (2009). *Bringing it to the Table: On Farming and Food*. Berkeley, CA: Counterpoint.
- Berardi, G. M. (1978). Organic and conventional wheat production: examination of energy and economics. *Agro-ecosystems*, 4(3), 367-376.
- Brown, S., Schreiner, C., Gwin, L., & Stephenson, G. (2017). *Breaking New Ground: Farmer Perspectives on Organic Transition*. Oregon Tilth and Oregon State University.
- Brumfield, R. G., Rimal, A., & Reiners, S. (2000). Comparative cost analyses of conventional, integrated crop management, and organic methods. *HortTechnology*, 10(4), 785-793.
- Bunge, Jacob. 2017. *Supersized Family Farms Are Gobbling up American Agriculture*. Wall Street Journal. Accessed on web April 25, 2019.
- Calvin, L. & Martin, Philip. November 2010. *The U.S. Produce Industry and Labor: Facing the Future in a Global Economy*. USDA, Economic Research Service.
- Cavigelli, M., Hima, B., Hanson, J., Teasdale, J., Conklin, A., and Lu, Yao-chi. March 2009. Long-term economic performance of organic and conventional field crops in the mid-Atlantic region. *Renewable Agriculture and Food Systems*, Vol. 24, Issue 2, pp. 102-119.
- Cernansky, R. November 2018. We don't have enough organic farms. Why not? *National Geographic, Food and Future Series*. Retrieved April 25, 2019 from <https://www.nationalgeographic.com/environment/future-of-food/organic-farming-crops-consumers/>
- Che, D., Veeck, A., & Veeck, G. (2005). Sustaining production and strengthening the agritourism product: Linkages among Michigan agritourism destinations. *Agriculture and Human values*, 22(2), 225-234.

- Clark, M., & Tilman, D. (2017). Comparative analysis of environmental impacts of agricultural production systems, agricultural input efficiency, and food choice. *Environmental Research Letters*, 12(6), 064016.
- Connor, D. J. (2013). Organically grown crops do not a cropping system make and nor can organic agriculture nearly feed the world. *Field Crops Research*, 144(20), 145-147.
- Cooper, S.M., Fallon, K.E., Goettig, M., Sack, L., Salins, R.P. and L.P. Zuckerman. January 2018. U.S. Department of Labor Issues New Guidance on Unpaid Interns. Davis Wright Tremaine Website. Retrieved on April 25, 2019, from <https://employmentlaw.dwt.com/us-department-of-labor-issues-new-guidance-on-unpaid-interns-01-19-2018/>
- Cutforth, L.B., Francis, C.A., Lynne, G., Mortensen, D.A. and Kent M. Eskridge. (2001). Factors affecting farmers' crop diversity decisions: An integrated approach. *American Journal of Alternative Agriculture*, Vol. 16, No. 4, pp. 168-176.
- Davis, A. S., Hill, J. D., Chase, C. A., Johanns, A. M., & Liebman, M. (2012). Increasing cropping system diversity balances productivity, profitability and environmental health. *PloS one*, Volume 7, Issue 9.
- De Ponti, T., Rijk, B., and Van Ittersum, M.K. (2012). The Crop Yield Gap between Organic and Conventional Agriculture. *Agricultural Systems*, Volume 108, pp 1-9.
- Delbridge, T., King, R., & King, R. (2017). Risk and Red Tape: Barriers to Organic Farming. *Journal of Food Products Marketing*, 23(4), 1-10.
- Delgado, J. and Heyman, A. February 2013. Farmers' Guide to Farm Internships. *Farmers' Legal Action Inc.* Saint-Paul, Minnesota
- Dettmann, R. L., & Dimitri, C. (2009). Who's buying organic vegetables? Demographic characteristics of US consumers. *Journal of Food Products Marketing*, 16(1), 79-91.
- DiGiacomo, Gigi and King, R.P. 2015. Making the transition to organic: ten farm profiles. Sustainable Agriculture Research and Education Program (SARE). Retrieved from the University of Minnesota Digital Conservancy, <http://hdl.handle.net/11299/181352>.
- Dirr, Allison. 2012. "Organic farming: Reduced chemical costs, increased labor." *American News*, Article Collections: Millet.
- Ekers, M., Levkoe, C. Z., Walker, S., & Dale, B. (2016). Will work for food: agricultural interns, apprentices, volunteers, and the agrarian question. *Agriculture and human values*, 33(3), 705-720.

- Ekers, M., & Levkoe, C. November 2015. Transformations in agricultural non-waged work: From kinship to intern and volunteer labor. *Journal of Agriculture, Food Systems and Community Development*, 6:2, 179-183.
- Fact Sheet #71: Internship Programs Under The Fair Labor Standards Act. January 2018. Department of Labor, Wage and Hour Division. Retrieved on April 25, 2019 from <https://www.dol.gov/whd/regs/compliance/whdfs71.htm>
- Ferguson, Rafter & Lovell, Sarah. (2017). Diversification and labor productivity on US permaculture farms. *Renewable Agriculture and Food Systems*.
- Food and Agriculture Organisation of the United Nations (FAO). "Why is organic food more expensive than conventional food?" Web Access: <http://www.fao.org/organicag/oa-faq/oa-faq5/en/>. Accessed on: 5 December 2018.
- Gattinger, A., Muller, A., Haeni, M., Skinner, C., Fliessbach, A., Buchmann, N., ... & Niggli, U. (2012). Enhanced top soil carbon stocks under organic farming. *Proceedings of the National Academy of Sciences*, 109(44), 18226-18231.
- Gray, Margaret. Labor and the Locavore: The Making of a Comprehensive Food Ethic. Berkeley: University of California Press, 2013.
- Guthman, Julie. *Agrarian Dreams*. Oakland, California: University of California Press, 2014. Print.
- Greene, C. R., & Kremen, A. (2003). *US organic farming in 2000-2001: Adoption of certified systems* (No. 1474-2016-120833).
- Hanson, J. C., Lichtenberg, E., & Peters, S. E. (1997). Organic versus conventional grain production in the mid-Atlantic: An economic and farming system overview. *American Journal of Alternative Agriculture*, 12(1), 2-9.
- Hepperly, P., Seidel, R., Pimentel, D., Hanson, J., & Douds, D. (2007). Organic farming enhances soil carbon and its benefits (pp. 129-153). CRC Press: Boca Raton, FL, USA.
- Jackson, L., S. Smukler, L. Murphee, R. Yokota, S.T. Koike, and R.F. Smith. 2008. Cross disciplinary analysis of the on-farm transition from conventional to organic vegetable production. 16th IFOAM World Congress. International Federation of Organic Agriculture Movements.
- Jones, V. P., Unruh, T. R., Horton, D. R., Mills, N. J., Brunner, J. F., Beers, E. H., & Shearer, P. W. (2009). Tree fruit IPM programs in the western United States: the challenge of

enhancing biological control through intensive management. *Pest Management Science: formerly Pesticide Science*, 65(12), 1305-1310.

Kalyuzhny, J. (2012). Cultivating the next generation: Why farming internships should be legal. *San Joaquin Agricultural Law Review*, 21(1), 131–154.

Karlen, D.L., Duffy, M.D., Colvin, T.S. 1995. Nutrient, labor, energy, and economic evaluations of two farming systems in Iowa. *Journal of Production Agriculture*, Volume 8: 540-546.

Klepper, R., Lockeretz, W., Commoner, B., Gertler, M., Fast, S., O'Leary, D., Blobaum, R. February 1977. Economic Performance and Energy Intensiveness on Organic and Conventional Farms in the Corn Belt: A Preliminary Comparison. *American Journal of Agricultural Economics*, Volume 59, Issue 1, Pages 1–12

Klonsky, K. (2011). Comparison of production costs and resource use for organic and conventional production systems. *American Journal of Agricultural Economics*, 94(2), 314-321.

Liebman, M., & Staver, C. (2001). Crop diversification for weed management. *Ecological Management of Agricultural Weeds* (pp. 322-374). Cambridge: Cambridge University Press.

Lockeretz, W., Shearer, G., and Daniel H. Kohl. February 1981. Organic Farming in the Corn Belt. *Science, New Series*, Vol. 211, No. 4482, pp. 540-547

MacAuley, L. E., & Niewolny, K. L. (2016). Situating on-farm apprenticeships within the alternative agrifood movement: Labor and social justice implications. *Journal of Agriculture, Food Systems, and Community Development*, 6(2), 195–223.

MacHardy, W.E. 2000. Current Status of IPM in apple orchards. *Crop Protection*, Vol. 19, pp. 801-806

Mahoney, P.R., K.D. Olson, P.M. Porter, D.R. Huggins, C.A. Perillo, and R.K. Crookston. 2004. "Profitability of Organic Cropping Systems in Southwestern Minnesota." *Renewable Agriculture and Food Systems*, 19(1):35-46.

Martin, P. L. (1983). Labor-intensive agriculture. *Scientific American*, 249(4), 54-59.

Menalled, F., C. Jones, D. Buschena, and P. Miller. 2012. From conventional to organic cropping: What to expect during the transition years. Guide MT200901AG. Montana State Univ. Ext., Bozeman.

- Mercaris Data Services. 2018. Mercaris Acreage Report: U.S. Boasts 6.5 Million Acres of Organic Certified Land with 460 New Operations in 2018. Retrieved on April 25, 2019, from <https://mercaris.com/posts/u-s-boasts-6-5-million-acres-of-organic-certified-land-with-460-new-operations-in-2018>
- New York State Department of Labor. 2016. "Fact Sheet: Wage Requirements for Interns."
- Nguyen ML, Haynes RJ. 1995. Energy and labour efficiency for three pairs of conventional and alternative mixed cropping (pasture-arable) farms in Canterbury (New Zealand). *Agriculture, Ecosystems and Environment*, 52: 163–172.
- Ord, C., & Amer, J. 2010. Contribution of volunteer tourism to organic farms: An analysis of WWOOF exchange in Canada (Unpublished Master's thesis). Palma De Mallorca, Spain: University of the Balearic Islands.
- Organic Trade Association (OTA). March 2017. "New state data shows organic now in the kitchens of over 80 percent of U.S. households."
- Orsini, S., Padel, S. and Nic Lampkin. October 2016. Labour Use on Organic Farms: a Review of Research since 2000. *Organic Farming*, Vol. 4, Issue 1, pp. 7-15.
- Paul, J., & Rana, J. (2012). Consumer behavior and purchase intention for organic food. *Journal of consumer Marketing*, 29(6), 412-422.
- Pimentel, D., Berardi, G., & Fast, S. (1983). Energy efficiency of farming systems: organic and conventional agriculture. *Agriculture, Ecosystems & Environment*, 9(4), 359-372.
- Pimentel, D., Hepperly, P., Hanson, J., Douds, D., & Seidel, R. July 2005. Environmental, Energetic, and Economic Comparisons of Organic and Conventional Farming Systems. *BioScience*, 55:7, 573-582.
- Ponisio Lauren C., M'Gonigle Leithen K., Mace Kevi C., Palomino Jenny, de Valpine Perry and Kremen Claire. (2014). Diversification practices reduce organic to conventional yield gap. *Proceedings of the Royal Society B: Biological Sciences*, Volume 282, Issue 1799.
- Post, E. and Schahczenski, J. November 2012. Understanding Organic Pricing and Costs of production. National Sustainable Agriculture Information Service.
- Robinson, Elton. 2013. Organic Production and the Labor Problem. Western Farm Press. Retrieved on April 25, 2019, from <https://www.farmprogress.com/blog/organic-production-and-labor-problem>
- SARE 2003. "The Economics of Organic Production" from Transitioning to Organic Production.

- Seufert, V., Ramankutty, N., and Foley, J.A. April 2012. Comparing the yields of organic and conventional agriculture. *Nature*, Vol. 485, Pages 229-232.
- Shearer, G., Kohl, D. H., Wanner, D., Kuepper, G., Sweeney, S., & Lockeretz, W. (1981). Crop production costs and returns on Midwestern organic farms: 1977 and 1978. *American Journal of Agricultural Economics*, 63(2), 264-269.
- Shreck A., Getz, C., & Feenstra, G. December 2006. Social sustainability, farm labor, and organic agriculture: Findings from an exploratory analysis. *Agriculture and Human Values*, 23, 439-449.
- Terry, William. 2014. Solving labor problems and building capacity in sustainable agriculture through volunteer tourism. *Annals of Tourism Research*, Volume 49, 94-107.
- Tew, C., & Barbieri, C. (2012). The perceived benefits of agritourism: The provider's perspective. *Tourism Management*, 33(1), 215-224.
- Thinning. (n.d.) In Wikipedia. Retrieved April 28, 2019, from: <https://en.wikipedia.org/wiki/Thinning>
- Uematsu, H., & Mishra, A. April 2012. Organic farmers or conventional farmers: Where's the money? *Ecological Economics*, 78, 55-62.
- U.S. Citizenship and Immigration Services. 2019. "H2A Temporary Agricultural Workers." Retrieved on April 25, 2019, from <https://www.uscis.gov/working-united-states/temporary-workers/h-2a-temporary-agricultural-workers>.
- USDA National Institute of Food and Agriculture. "Family farms." Retrieved on April 25, 2019 from: <https://nifa.usda.gov/family-farms>
- USDA Environmental Research Service. Farm Labor Summary. Updated: November 08 2018. Web Access: <https://www.ers.usda.gov/topics/farm-economy/farm-labor/>.
- USDA, National Agricultural Statistics Service. 20 September 2016. 2016 Sales of U.S. Certified Organic Agricultural Production Up 23 Percent from Previous Year [press release]. Retrieved on April 25, 2019, from: https://www.nass.usda.gov/Newsroom/archive/2017/09_20_2017.php
- USDA, National Agricultural Statistics Service. September 2017. Certified Organic Survey: 2016 Summary.
- Watson, Molly. 2017. Community Supported Agriculture (CSA). The Spruce Eats.

“What is Integrated Pest Management?” UC IPM Website. Retrieved on April 25, 2019 from <https://www2.ipm.ucanr.edu/What-is-IPM/>

Wood, Kathleen F. 2013. “Laboring to learn and learning to labor: experiences of farm interns on sustainable farms.” Unpublished Master’s thesis.

WWOOF International. “History of WWOOF,” Retrieved on April 25, 2019 from: <https://wwoofinternational.org/history-of-wwoof/>

Yamamoto, D. & A. Katrina Engelsted (2014) World Wide Opportunities on Organic Farms (WWOOF) in the United States: locations and motivations of volunteer tourism host farms, *Journal of Sustainable Tourism*, 22:6, 964-982

Zepeda, L., & Nie, C. (2012). What are the odds of being an organic or local food shopper? Multivariate analysis of US food shopper lifestyle segments. *Agriculture and Human Values*, 29(4), 467-480.

Zwickle, S. L. (2011). *Weeds and organic weed management: Investigating farmer decisions with a mental models approach*(Doctoral dissertation, The Ohio State University).

Appendix A

Interview Questions

i. Farm Characteristics

1. *Farm Characteristics*

- i. How many acres do you farm?
- ii. What crops do you plant?
- iii. What is your sales approach? Do you sell your produce wholesale or directly to the consumer?
- iv. Do you have any certifications such as a USDA organic certification or a Demeter Biodynamic certification?
 - i. When did you acquire this certification?

ii. *Farmer History*

- v. How long have you been a farmer?
- vi. How long have you been farming this land in particular?
- vii. Did you inherit this farm from your family?
- viii. Have you ever been an apprentice or intern?
- ix. How did you acquire your farming knowledge or skillset?

iii. *Sustainability Practices*

- x. What sustainable land management practices do you use, if any? These might include intercropping, weeding, cover cropping etc.
- xi. How long have you been using these practices on this particular land?
- xii. Do you consider your farm ecologically sustainable?

iv. *Labor and Income*

- xiii. Approximately what percent of your annual budget goes toward labor?
- xiv. How many paid employees do you have? 35 increases in the summer in all of operation.
 - i. Are they salaried or paid by the hour?
 - ii. Are they seasonal or year round employees? Are you/is the farm manager salaried?
- xv. Is your farm income supplemented by other sources of income?

- xvi. Do you use any form of unpaid labor?
 - i. What kinds of unpaid labor do you use? Unpaid labor might take the form of volunteers, day labor, apprentices, interns and U-Pick.
 - ii. How frequently do you host volunteers? Day laborers? Interns? Apprentices? U-pick?
- xvii. If you do not use forms of unpaid labor, or you do not consider the above roles as forms of unpaid labor, please explain.

B. Perceptions about labor demand

i. Sustainability and Labor

- 18. Do you have any technology to aid in your sustainable land management practices?
 - 1. Do you think that using this technology reduces your labor demand?
- 19. (for orchards only) Do you find that sustainable practices in orchard management like integrated pest management or low spray require more labor?
- 20. (for vegetable farms only) In my research, I have found that organic and otherwise sustainability-oriented farms require more labor. In your experience, do you find that using ecological practices increases your demand for labor?
 - 1. If so, what practices do you think particularly increase your need for labor?

ii. History of Unpaid labor (skip for U-Pick)

- 21. How do you connect with volunteer workers? Do you recruit them or do they approach you? Please indicate if you have ever used sites like WWOOF, Workaway or HelpX to connect with volunteers.
- 22. What kind of work do you assign to these volunteers?
- 23. Are some of the volunteers compensated with housing and/or food?
- 24. Have you ever hosted any full-time volunteer workers?
 - 1. If so, are they or were they partially compensated?
 - 2. What are their official titles?

iii. Farmer Experience with Unpaid Labor

25. What are the top three benefits of using unpaid labor?
26. What are some of the challenges you associate with unpaid labor?
27. Do you see a difference between the quality of unpaid labor and the quality of hired labor on your farm? If so, please elaborate.
28. What do you think the volunteer workers get out of their involvement with your farm?
29. If you have had apprentices, have any of them continued to farm after their apprenticeship or even started their own farms?
30. Is it a goal of yours to not use volunteer labor in the future?
31. Do you think your operation could continue to be profitable if you didn't use volunteer labor? Why or why not?