From Food Forest to Microfarm:

VALUES, PRACTICES AND RELATIONS OF FIRST GENERATION FARMERS IN THE U.S. AND THE NETHERLANDS.

Author: Laura Genello

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Supervisor: Dirk Roep
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Wageningen University

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Executive Summary

The average age of farmers is steadily rising across the United States and Europe, while the proportion of young and beginning farmers declines. Challenging economic conditions, coupled with agricultural consolidation and rising costs, have led to a decrease in farm successions. Simultaneously, the popular media has reported on increasing interest in agricultural careers among those from non-farming backgrounds. This emerging population of first generation farmers has largely been ignored by the academic literature, with only a handful of studies that suggest the ways in which these farmers differ from others. This study aims to characterize the values, practices and supply chain relations of first generation, beginning farmers (FBFs). By incorporating concepts from research on farming styles, agricultural paradigm shifts and identity, I investigate to what extent FBFs represent change in agricultural attitudes and practice. To do so, I position their farming styles between the archetypes of the productionist and agroecological paradigms. These paradigms hold specialized, commoditized and production-centric traditions in agriculture on one side of a spectrum, and ecologically oriented, community embedded alternatives on the other. I took a comparative, exploratory approach, recruiting farmers who were both first generation (did not take over a family farm), and beginning (approximately less than 10 years experience) from two countries, the Netherlands and the U.S. state of Maryland. Data collection occurred in two phases: an online survey distributed using snowball sampling, followed by semi-structured interviews with 33 participants (15 in the Netherlands; 18 in the U.S.), selected strategically to represent a diversity of survey respondents. The survey yielded 95 responses that met the inclusion criteria: 38 from the Netherlands and 57 from the United States. Most FBFs were practicing small-scale, diversified agriculture, marketing direct to consumer, and using some level of unmapped organic methods. Interviews revealed FBFs to be motivated by a search for meaningful work, and generally have a strong environmental and community ethic. These principles were balanced with a high valuation of the business of farming. FBFs faced a variety of challenges, predominantly financial constraints, access to land and labor, lack of knowledge and regulatory barriers. Their farm practices and structure were the result of a negotiation between their values and business ethic as filtered through practical constraints. The solutions they employed included small-scale, low-investment configurations, direct marketing, judicious application of web-based and small farm technology, strong online and in-person networks, and collaborations to access land, share knowledge and market products. While their practices, relations and values are heterogeneous, overall FBFs represent a shift towards the agroecological paradigm.

Key Words: beginning farmers, first generation farmers, new entrants, agroecology, farming styles, farmer identity, alternative food networks.

Contents

Chapter 1: Introduction

The Context

An inevitable transition is occurring in agriculture. The proportion of young and beginning farmers declines in many regions, while the global farm population ages (van der Ploeg, 2006; Ahearn, 2013b). As aging farmers retire, there are three processes that can occur: their farmland will be developed, their farms will be consolidated, or new farmers will take their place. In this thesis, I explore the third process. In particular, I examine evidence of an emerging cohort of new agriculturalists. Who will run these farms of the future? And what impact will they have on the food system?

The current farm demographics arise from the backdrop of agricultural change in the last century. Throughout the 20th century, agriculture in the U.S. and much of Europe underwent a radical structural transformation in which farms increased in scale, specialization, global reach and industrialization (Lang & Heasman, 2015; van der Ploeg & Roep, 2003). During this time the cost of entry into agriculture has risen steeply (Lasley, 2015). Surrounding conditions, such as a pay gap between agriculture and other professions and a lack of development in rural infrastructure, have intensified an exodus of rural youth, particularly in areas with low population density and disposable income (Bertoni & Cavicchioli, 2016). Across the 28 member states of the European Union, over 53% of farmers are now over 55, and only 7.5% of farm managers are under 35 (Augere-Granier, 2015). The age dynamics of the farming community vary by context, and Zagata and Sutherland (2015) found in an analysis of Eurostat data that countries in which smallholder agriculture still dominates the agricultural landscape are more likely to face a shortage of young farmers than more agricultural industrialized nations. In the U.S. the proportion of young and beginning farmers in agriculture has been declining since the 1980s (Ahearn, 2013a). As land prices have soared and farm scale has increased, beginning farmers face high barriers of entry, including access to land, capital, credit and markets (Augere-Granier, 2015; Kielbasa, 2016; Monller & Fuller, 2016; Taylor & Koo, 2013).

Despite the hardships of a career in agriculture, there seems to be persistent interest in food and farming among young people (Lasley, 2015) and other aspiring farmers, including those from non-agricultural backgrounds (Ackoff, Bahrenburg & Lusher Shute, 2017). This can be evidenced by the growth in popularity of farm apprenticeship programs (Ekers et al., 2015; MacAuley & Niewolny, 2016), volunteerism services such as World Wide Opportunities on Organic Farms (WWOOF), and the rapid development of a variety of public and private beginning farmer education programs (Niewolny & Lillard, 2010; Yamamoto & Engelsted, 2014).

Moreover, a number of policies and programs in the U.S. and Europe have arisen in recent decades to ease the generational transition in agriculture and provide support for young and/or beginning farmers (Niewolny & Lillard, 2010; Zagata & Sutherland, 2015). For example, the 2014-2020 reform of the European Common Agricultural Policy (CAP) included provisions for young farmers to receive a direct

payment for five years and a start-up support fund for those who submit an approved business plan (Augere-Granier, 2015). In the U.S. efforts to support beginning farmers include the Farm Service Agency's Beginning Farmers and Ranchers Loan program, and the United States Department of Agriculture (USDA)'s Beginning Farmer and Rancher Development Program, which funds organizations that offer support to beginning farmers. A better understanding of this population can aid the development of appropriate and effective support programs.

Today, the food system is again at a tipping point. The environmental, social and public health consequences of the global-industrial food system are widely acknowledged, and there has been widespread call for change (Horrigan, Lawrence & Walker, 2002; Rockstrom et al., 2016; Tilman et al., 2002). Many scholars believe that the food system is currently undergoing a major paradigm shift, as we move out of the productionist era of producing commodities fencerow to fencerow and into a period of multifunctional agriculture that values the services of a farm to the environment, rural communities, and the social fabric of society beyond the products that they produce (Davis & Carter, 2014; Holmes, 2006). Beginning farmers are entering agriculture at this critical juncture. A better understanding of the motivations, values and practices of this emerging cohort of farmers is essential for understanding the role that they play in food system transformation.

Defining Beginning Farmers

Much public policy discourse currently conflates young and beginning farmers, but the distinction between the terms is important (Zagata & Sutherland, 2015). In the U.S., agricultural policies are tailored to beginning farmers; whereas, in Europe the discourse centers on young farmers. Beginning farmers are defined by the USDA as those who have operated their farm for 10 years or less, regardless of age (Ahearn, 2013a). Not all beginning farmers are young; the average age of a beginning farmer in the U.S. was 49 as of 2012 (Ahearn, 2013b), and only 19% of U.S. beginning farmers were under 35 (Katchova & Ahearn, 2015). Within the category of beginning farmers, Monller and Fuller (2016) make the additional distinction between continuers, those who have taken over the farm from a family member, and newcomers, or first generation farmers. Young farmers, by contrast, are often defined at least partially by age. The CAP defines young farmers as individuals under 40 years old who have established their farm within the last five years (Augere-Granier, 2015). Other non-governmental organizations and agricultural researchers on both continents, including the European Council of Young Farmers (CEJA) in Europe, often define the group strictly by age, with 35 or 40 representing the upper boundary.

Unfortunately, agricultural census data in the U.S. and Europe has not yet collected information on the proportion of young or beginning farmers that are newcomers to agriculture. A recent survey conducted by CEJA found that across the E.U. approximately 15% of young farmers did not come from an agricultural background (CEJA, 2017), while the remainder inherited family farms. The National Young Farmers Coalition in the United States conducted a similar survey of beginning farmers in early 2017, and found that of the 3,517 respondents, 75% did not come

from farming families (Ackoff, et al., 2017). Both of these studies were exploratory in nature, and neither used methods to ensure a statistically representative population. Thus, it is difficult to generalize these proportions of agricultural newcomers to the general population of young or beginning farmers in each context. Regardless, it is clear that in both contexts, first generation farmers comprise a substantial proportion of beginning agriculturalists.

Beginning Farmers as Drivers of Change

Both young and beginning farmers are demographically distinct from other farmers with the most noted difference being a higher level of education (Ackoff, et al., 2017; Ahearn, 2013; Rantamäki-Lahtinen & Vare, 2012). Beginning farmers are more likely to be female than their more established counterparts (Ahearn, 2013; Monller and Fuller, 2016), and in the U.S. were comprised of nearly double the proportion of farmers of color than the general farming population (Ackoff, et al., 2017).

Several studies have focused on scale and profit dynamics of the farms managed by young or beginning operators. On average Zagata and Sutherland (2015) found that larger farms across the EU27 were more likely to managed by younger operators. However, over 70% of young farmers operate farms less than 10ha. It's important to note here that the vast majority of farm holdings worldwide are small farms regardless of the age of the operator (Lowder, Skoet, & Raney, 2016). The situation in the U.S. is similar with most young farmers and beginning farmers generally operating small farms (Mishra, Wilson, & Williams, 2009), with an emphasis on diversified vegetable production (Ackoff, et al., 2017). However, among beginning farmers, those who are younger are more likely to operate larger farms with higher profits, and higher levels of investment than older beginning farmers (Ahearn, 2013b; Katchova & Ahearn, 2015). Similarly, beginning farmers from family farming backgrounds typically operated larger farmers than those who were first generation farmers (Ackoff, et al., 2017). Younger beginning farmers also had faster growth in both farm income and expenses, indicating rapid farm investment (Williamson, 2017), and first generation farmers were typically more tolerant of risk than continuers (Roe, 2015). At the same time, beginning farmers often depend on off-farm sources of income (Taylor & Koo, 2013).

In addition to scale and economic disparities, some studies have found a correlation between age or experience and farming practices. Young farmers have been found to be more likely to adopt sustainable practices (Comer et al., 1999; van Passel et al., 2007), and to be more receptive to agro-environmental measures (Vanslembrouck, van Huylenbroeck, & Verbeke, 2002). Both the surveys by CEJA and the National Young Farmers Coalition revealed that the majority of beginning farmer respondents were using sustainable methods (Ackhoff et al., 2017; CEJA, 2017). In particular, several studies have shown that farmers who adopt organic certification tend to be younger, better educated and have less farming experience than conventional farmers (Lobley, Butler, & Reed, 2009; Padel, 2001). Interestingly, younger farmers, both continuers and newcomers, place a higher emphasis on economic values than older respondents, indicating pressure to quickly build an economically viable business (Inwood, Clark, & Bean, 2013).

A handful of studies have made further distinctions between first generation farmers and those continuing a family operation. First generation farmers are more likely to practice small-scale, diversified, ecological agriculture than continuers (Monller & Fuller, 2016), and to discuss environmental issues and spirituality as motivations to farm (Inwood, et al., 2013). These findings are consistent with those of Vijn et al. (2011) who found that newcomers to Dutch multifunctional agriculture were often operating small scale, organic horticulture operations. Overall, Monller and Fuller (2016) found newcomers scored higher on what they termed the agro-social index, based around eight dimensions, including environment, local scale, diversity, autonomy and innovation. By contrast, continuers are more likely to continue an existing family farming strategy. Interestingly, when the authors looked just at attitudes as opposed to practices there was less of a gap between newcomers and continuers, indicating that perhaps there is a time lag before continuers can adapt their farms to match their values (Monller & Fuller, 2016).

Problem Statement

An ownership transition in agriculture is inevitable. There are three processes that will occur as an aging farming population retires: the agricultural industry will see increasing consolidation, farmland will be lost to development, and new farmers will take their place. Within the cohort of beginning farmers, those who are first generation farmers represent an intriguing new population in agriculture, due to their potential to bring about change in agriculture. While young people from agricultural backgrounds increasingly leave rural communities to seek more stable sources of income, a new, educated, urban population is simultaneously attracted to agriculture. Few studies explore why.

Much of the literature to date on beginning or young farmers uses large data sets to explore issues of succession, demographics and economics. Often the correlations between age or experience and farming practices have been explored only incidentally by researchers that, in examining the adoption of specific practices, search for factors of correlation. Moreover, few studies have examined first generation farmers directly. Collectively, the literature reviewed above points to the potential for these next generation farmers, particularly agricultural newcomers, to be drivers of change in the food system. However, it is unclear if the different operating scales and practices of young and beginning farmers is a matter of preference or survival.

Given the abundance of policy and public discourse regarding beginning farmers, there is a need to better understand the motivations, values and practices of this population. This research aimed to fill that knowledge gap by providing a more holistic characterization of a very particular cohort: beginning farmers within the first 10 years of their agricultural career who identify as first generation farmers.

Research Objective

This research strived to better characterize first generation, beginning farmers in developed countries, in order to determine to what extent these farmers represent food system change. I focus specifically on first generation, beginning farmers as the most likely cohort of new agriculturalists to create change based on previous

literature. This study takes an international perspective, investigating farmers in two contexts, the Netherlands and the U.S. state of Maryland in order to assess to in which ways first generation, beginning farmers converge across borders. Using an explorative research design, this study will examine values, practices, supply chain relations and social networks of FBFs to answer the research questions outlined below.

RESEARCH QUESTIONS

This research aimed to answer the following overarching research question:

To what extent do beginning, first generation farmers (FBFs) represent change in the food system?

To do so, this research was structured around the following four sub-questions and their component parts.

1. **What values are important to FBFs in regards to farming?**
   1.1. What motivates FBFs to start and stick with farming?
   1.2. What do FBFs believe constitutes a 'good farmer'?
2. **To what extent are those values expressed in their practices?**
   2.1. Which farming practices are important to FBFs?
   2.2. How do FBFs perceive their practices as differing from those of "most" farmers?
   2.3. Do FBFs perceive their ideals as aligning with their practices?
3. **How do FBF relate to markets and technology?**
   3.1. How do FBFs market their products?
   3.2. What do they perceive as the role of technology on their farm?
4. **To what extent are FBF part of a broader social movement?**
   4.1. To what extent do FBFs engage with a food and agricultural network?
   4.2. How do FBFs understand their role in the food system?

Chapter 2: Theoretical and Analytical Framework

This research is positioned against the backdrop of research on agricultural transitions, and uses concepts from farming styles research and identity theory to explore coherence or irregularities among beginning farmer values, practices and supply chain relations. By examining beginning, first generation farmers concept of a "good farmer" in relation to identity, this research positioned this emerging cohort of agriculturalists relative to productionist traditions in agriculture in order to assess to what extent these newcomers represent change.

Below, I will elaborate on concepts from farming styles, agricultural transitions and identity theory that were used in this research.

Farming Styles Research

The tradition of farming styles research was developed in the Netherlands over twenty years ago, initially as a strategy for explaining unexpected heterogeneity in agriculture (Vanclay et al., 2006; van der Ploeg, 2010). Despite a concerted policy and market driven effort to modernize Dutch agriculture in the 1960s and 1970s, farms did not develop along a single expected trajectory of increasing scale and intensity. Unexpectedly, small, extensive operations persisted and even proved resilient in the face of crisis (Van der Ploeg, 2009). The identification of various styles of farming helped to explain this variation as partially an internal decision making process. The definition and concept of farming styles have changed over time, and have since been applied to a variety of contexts around the globe (Van Averbeke & Mohamed, 2006; Vanclay et al., 2006). Generally, different farming styles can be distinguished by the following elements (Van der Ploeg, 2010):

(1) Values: A coherent set of notions and normative values on the practice of farming. This set of norms composes what Van der Ploeg termed the "cultural repertoire" of farmers;
(2) Practices: An internally consistent set of practices; and
(3) Relations: A set of relations between the farm and technology, markets and government policy.

While farming styles research initially was a useful academic tool to describe and explain agricultural diversity, the labels often used to describe the styles themselves proved problematic, sometimes carrying negative social connotations or representing stereotypes (Van der Ploeg, 2010; Vanclay et al., 2006). When trying to apply the concept to an Australian context, researchers Howden and Vanclay (2000), found that while farmers were receptive to the idea of farming styles, and could easily recognize and label styles within their community, both farmers and extension agents struggled to put themselves or others in particular farming style categories. Many farmers identified with elements of multiple styles, and the words used to describe a style by one farmer might seem derogatory to another. Thus, the researchers conclude that farming styles are best when thought of as a "heuristic

parable" rather than a mutually exclusive and deliberate classification based on conscious farmer choice (Howden & Vanclay, 2000). Van der Ploeg (2009) has since clarified that farming styles were not intended as mutually exclusive categories, and that sometimes the classifications have been used, not to support farmers' diversity, but to find ways to encourage modernization.

Heterogeneity of farming communities is now much more widely recognized than when farming styles research was initially developed. In fact, both very large and very small farms have been the only two size classes of farms to increase in number in the last 20 years in the U.S. (Taylor & Koo, 2013), in contrast to past predictions of a uniform trajectory of modernization. However, the definition of a farming style outlined above provides a useful framework for assessing the elements that can make a farmer distinct from her peers: values, practices and relations.

Farming styles research developed in tandem with work on agricultural transitions.

Agricultural Transitions

The composition of rural communities is changing. In Europe and the United States, many rural communities have seen an increase in multifunctional agricultural activities, such as agritourism and conservation measures, in addition to an increasing proportion of non-farm landowners (Groth et al., 2014; Pinto-Correia et al., 2014). This changing landscape has led to a new rural development paradigm that consists of a post-productionist or a multifunctional transition in which rural communities shift from spaces of production to multifunctional spaces of consumption (Everett, 2012; Holmes, 2006; Van der Ploeg & Roep, 2003).

This changing rurality is part of a network of fissures forming in the global-industrial food regime. Many scholars have argued that the food system is on the verge of a paradigm shift, precipitated by a revolution in bio and information technologies and the backlash against the dehumanizing and environmentally destructive tendencies of the global industrial system (Levidow, 2015; Marsden, 2013). These new paradigms have been given many names, but can be seen as a struggle between (at least) two divergent ideologies (Lang & Heasman, 2015; Levidow, 2015).

Lang and Heasman (2015) term these two ideologies the *ecologically integrated* and the *life sciences integrated paradigm*. They argue that these two paradigms are competing to supersede the *productionist paradigm,* representing production-centric, specialized, and industrialized agriculture. In the life sciences integrated paradigm farms not only produce food, but also a wide range of ecological capital, such as biofuels, natural fibers and plastics; others often describe this as the bioeconomy (Levidow, 2015; Marsden, 2013). The bioeconomy capitalizes on the global, industrial foundation of the current food system, and aims to use emerging biotechnologies to increase agricultural efficiency as a pathway to sustainability and food security (Marsden, 2013). Despite an enhanced emphasis on sustainability, the life-sciences integrated paradigm does not represent a restructuring of the food system, nor does it remove the emphasis from increasing crop yields (Levidow, 2015). In fact, it could be argued that rather than representing a new paradigm, this

shift is a refinement of the productionist model. Lang and Heasman's (2015) ecologically integrated paradigm, by contrast, embraces diversified, small scale, localized food systems that are deeply embedded in local communities and natural environments. Also termed the eco-economy, or the agroecological paradigm (Altieri & Toledo, 2011; Marsden, 2013), this paradigm grew out of the agroecology movement of the global south, but has since also become prevalent in the developed world (Levidow, 2015). In this research, I will use the term agroecological paradigm. Grounded in the science of agroecology, this paradigm is centered on small-holder agriculture, biodiversity and food sovereignty as a pathway to food security, providing a direct confrontation to the global-industrial core of the productionist food regime (Altieri & Toledo, 2011).

Productionist farmers are often characterized as those that not only focus on yields, but also rely heavily on synthetic inputs, growing few crops in short rotations, and extensively applying modern technology, such as mechanization or genetically modified seeds (McGuire, et al., 2015). Moreover, the productionist paradigm is inexorably linked with neoliberal discourse in which the market drives solutions, and increasing production is essential to fulfill market demand (Levidow, 2015). By contrast, in agroecology, farmers reject these practices focusing instead on agrobiodiversity, and techniques to harness organic, internal farm resources for fertility and pest control, such as cover cropping, polyculture, mulching, and minimum tillage (Altieri, 1995). Beyond farming practices, agroecology is also associated with social and economic values, such as financial autonomy, equity, democratic governance, geographic proximity and an emphasis on traditional and local knowledge (Dunmont et al., 2016).

A paradigm shift can be evidenced by the persistent growth in a wide range of "alternative food networks" (AFNs), a label often defined only by their difference from the hegemonic system (Dyball, 2015). These AFNs are distinguished by their emphasis on locality, quality, and transparency (Sonnino & Marsden, 2006). This label obfuscates a diversity of networks, ranging from global, organically certified supply chains to small, urban farms (Wilson, 2013). In fact, some argue that many AFNs serve as a complement to the global-industrial food system rather than an opposing movement (Goodman, 2004). For example, alternative food networks, such as farmers markets and CSA serving upper middle class clients have been criticized for reproducing the injustice of a global, capitalist system in exclusionary pricing and discourse centered on economics (Moragues-Faus, 2017; Goodman, 2004). The concept of embeddedness has evolved in order to help distinguish and describe this variation in alternative food networks.

Originally, the term embeddedness emerged out of economic sociology, in which economic decision-making is seen as being embedded in (influenced by and influencing) social relations, rather than merely economic calculations (Hinrichs, 2000). In food systems, the term is often used to describe the degree to which a food network is entwined in not only social relations, but also in relations with nature and territory (Sonnino & Marsden, 2006; van der Ploeg, 2006). Food networks can thus be distinguished by the type and degree of their relationships with people, culture, nature, and place. The global-industrial food system with its long supply

chains and place-less production methods has often been seen as the antithesis of a highly place-dependent and personal local food system (Hinrichs, 2000).

However, discourse that simply uses the degree of local embeddedness as a proxy for "good" or "bad," often ignores a myriad of nuance and conflict (Goodman, 2004; Hinrichs, 2000; Sonnino & Marsden, 2006). For example, the fact that social relations may be more immediate and apparent in local food networks does not mean that economic calculus is absent. Moreover, even the actors involved in the global-industrial system are influenced by social relations (Hinrichs, 2000). In order to address this oversimplification, Methorst (2016) identified three types of relationships applicable to farming systems in his concept of 3-fold embedding: (1) socio-cultural relations that shape the norms and values of a farmer, (2) value-chain relations, and (3) resource relations or relations with the natural environment. Methorst placed dairy farmers along a spectrum of embeddedness in each dimension, in order to classify the types of relationships in which they were involved. This approach allows for tension to exist between different dimensions of embeddedness, and helps prevent an overly simplistic discourse.

This concept of embeddedness along multiple dimensions can be useful for recognizing the differences between the productionist and agroecological paradigms. Farmers are not a uniform population and those aligned with different agricultural paradigms will have different sets of relations and thus often have opposing attitudes towards concepts such as sustainability or conservation (Abaidoo & Dickinson, 2002; McGuire, Morton, & Cast, 2013). However, this divide is not binary, nor static. Farmers' ideas may change with shifting practices (Huttunen and Peltomaa, 2016), just as farmers may hold multiple views and practices that are contradictory or result in tensions (McGuire, et al. 2013).

This research will take inspiration from Methorst's (2016) strategy of recognizing different dimensions of embeddedness. By looking at farmers' values, practices and relations (with technology and market) as three dimensions of embeddedness, I positioned farmers along a spectrum between an archetypical image of the agroecological farm and the productionist farm. In doing so, this research can shed light on to what extent and in which ways beginning farmers represent elements of a new agricultural paradigm, while avoiding binary classifications. Incorporating the concepts of identity discussed in the next section added another dimension to the discussion.

Concepts of Identity

A few scholars have tried to interweave identity theory into research on agricultural transitions and farming styles (Burton & Wilson, 2006). In psychology, the concept of identity has had many uses and application. Much of the literature relating farming styles to identity theory takes inspiration from Stryker and Burke's (2000) work that looks at both the internal and external dynamics that shape an individual's sense of identity. In their identity theory, the self reflects a multifaceted society. Thus, an individual's identity is composed of many hierarchical identities that manifest themselves in any given situation in accordance with the context and the identity's salience. In theory, the salience hierarchy of identity can predict

specific behaviors. An individual's behavior results from comparing the meanings of a situation with an identity standard, and acting in order to bring personal identity more in line with that standard (Stryker & Burke, 2000). There is some empirical evidence that farmers with different types of identities are more apt to engage in behaviors, such as sustainability measures (Bell, Jarnagin, & Bauer, 2000; McGuire, et al., 2013).

This idea of an identity standard aligns with what Riley (2016) terms the "good farmer concept:" farmers can identify a certain set of cultural norms and practices as being typical of a "good farmer." Despite academic discussions of post productionism, food production remains central to farmer's conception of farming (Herndl et. al., 2011; Warren et al., 2016). Burton (2004) found high yields and tidy farms to be deeply ingrained in UK farmers' notion of good farming. Subsequently, Burton and Wilson (2006) applied the concept of multifaceted and hierarchical identities to farming styles research. The researchers took four previously defined farming styles, and asked farmers to rank how closely they identified with each style, thus producing a hierarchy of salience. The research demonstrated that, not only were productionist styles a dominant component of farmer identity, but also that farmer identity can be composed of elements of multiple farming styles that vie for dominance.

From a pragmatic standpoint, these findings are unsurprising. Not only are farmers, like other business owners, engaged in an economic system that values production, but also the act of production is a defining feature of a farm, both in the dictionary and in agricultural policy. However, it is important to note that this production priority may not always be an economic priority. In a study of farmers engaged in Community Supported Agriculture (CSA) systems, Galt (2013) found that not only do CSA farmers often prioritize other values over income generation, but also that the obligation farmers felt to members led to self-exploitation in order to provide abundant shares. Indeed, this ability to self-exploit formed part of the farmers' "reserves of resistance," that allowed small-scale producers to persist in the face of competition from larger, streamlined firms (Galt, 2013). In fact, good farming ideals are dynamic and subject to constant renegotiation as practices change and farmers incorporate conservation or agritourism (Brandth & Haugen, 2011; Huttunen & Peltoma, 2016). Identity and farming practices co-evolve; just as identity shapes practice, practice shapes identity.

For this research, I applied the concept of an identity standard from identity theory to examine what elements create the definition of a "good farmer" for young and beginning farmers. In addition, I use the concept of salience to explore potential conflicts within farmers' values, practices and relations.

Analytical Framework

This research positions first generation, beginning farmers relative to agricultural paradigms in order to explore to what extent they represent change in the food system. To do so, I combined the concepts of agricultural transitions, farming styles and identity as follows.

Every farmer has a set of values, practices and relationship with technology and markets (research questions 1 through 3 respectively) that compose her unique farming style. These values, practices and relations can be thought of as aligning with various agricultural paradigms. However, this alignment is not a simple binary classification. Figure 1 positions the agroecological paradigm and the productionist paradigm as two extremes, representing largely opposing sets of values, practices and relations.

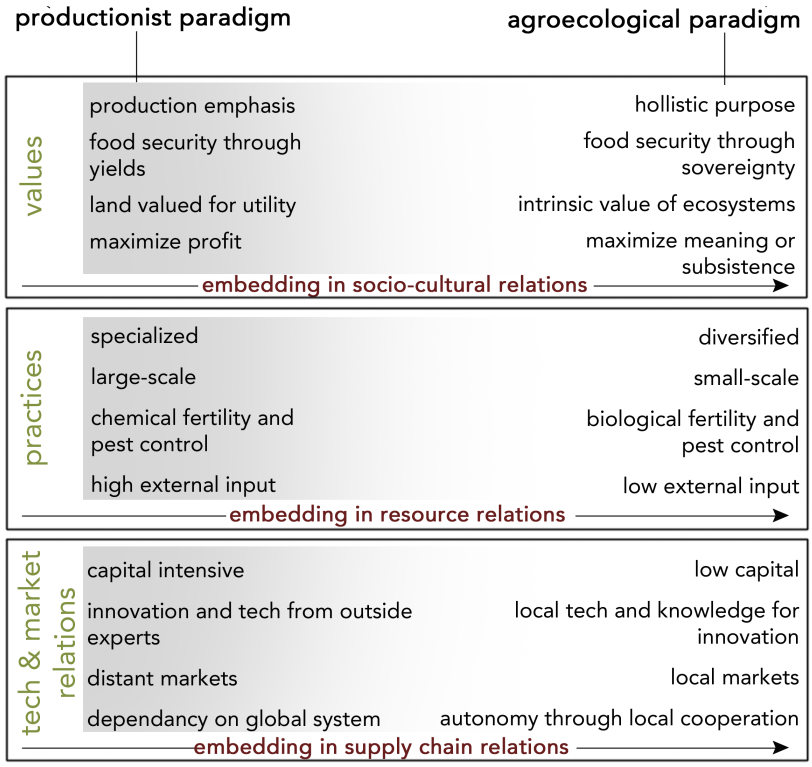


FIGURE 1: The productionist and agroecological paradigms represent two extremes on opposite ends of a spectrum of different values, practices and relations. These paradigms differ in various types of socio-cultural relations, resource relations and supply-chain relations, as described by the text in each column.

Inspired by Methorst's concept of 3-fold embedding, I looked at the 3 components of a farming style-- values, practices and relations (to market and technology)—as three dimensions of embedding between these two extremes. In Figure 1, the two opposing paradigms represent opposite ends of a spectrum of embeddedness, with farmers on opposite sides involved in very different sets of sociocultural, resource and value-chain relationships. Yet the examples listed in each dimension are extremes, and any given farm will fall differently along the spectrum. For example, a hypothetical farm may exhibit a high degree of embeddedness in resource relations, resulting from practices such as endemic natural-enemy pest control, but still have distant markets and a dependency on the global system. In this research, first generation, beginning farmers were positioned along this spectrum for each of the three dimensions of a farming style.

However, it's important to note that farmers have complex webs of values and relationships that do not always sit neatly along a linear spectrum. To account for this, I will incorporate the concept of farming identity (figure 2). Burton and Wilson (2006) conceptualized farming identity as being composed of hierarchical farming styles. These hierarchical styles are comprised of sets of values, practices and relations. Therefore, a farmer may hold multiple (and sometimes conflicting) sets of values, practices or relations. For example, CSA farmers may find their valuation of their own labor at odds with their desire to create an inclusive food system that provides accessible prices (Galt, 2013). Similarly, a farmer may almost always use organic pest control practices, but resort to copper-based fungicides to save his tomato crop from blight in a bad year. These values, practices and relations compete along the farmer's identity salience hierarchy, and can be not only ordered by degree of dominance, but can also be positioned along the axis of embeddedness that runs between the productionist paradigm and the agroecological paradigm (figure 2). It's important to note that these processes are dynamic, and shaped by both internal and external factors. The two-way arrows in figure 2 show how identity, values and relations are constantly shaping and are shaped by identity.

This study positioned first generation, beginning farmers along these two axes in terms of their values, practices and relations. Farmers whose values, practices and relations are clustered in the top right corner of such a plot in figure 2 represent a strong departure from the hegemonic agricultural system, whereas those that are

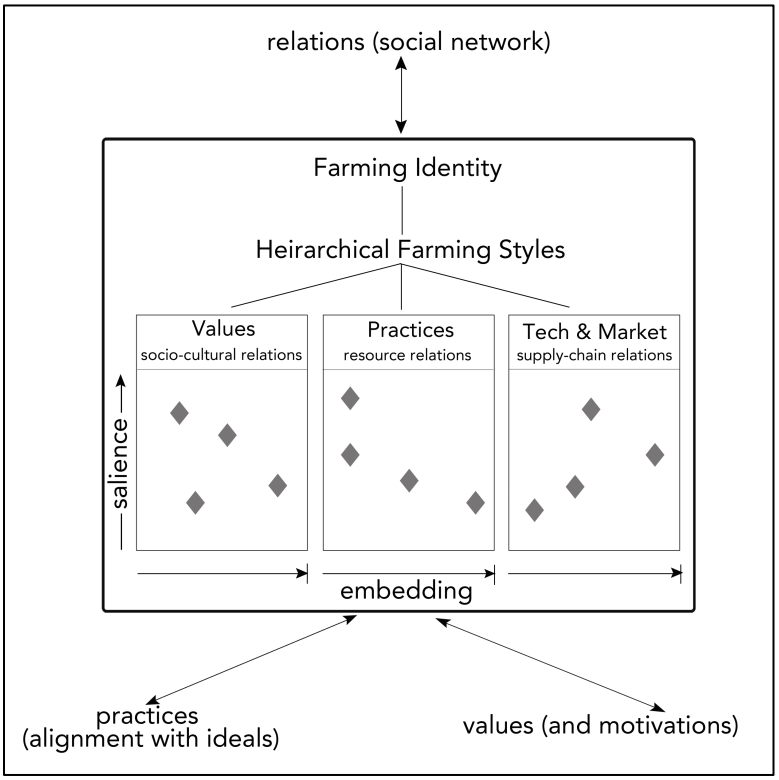


FIGURE 2: A farmer's identity can be thought of as composed of sets of (sometimes conflicting) values, practices and supply chain relations that are arranged in a hierarchy of salience. These values, practices and relations can also be positioned along an axis of embeddedness that describes the difference between the agroecological and productionist paradigms. The diamond shapes in each box represent hypothetical positioning of farmer's values, practices and relations.

clustered in the top left corner represent a dominant productionist inclination. In addition, this framework will allow me to explore tensions and contradictions within and between farmers' values, practices and relations.

Chapter 3: Methodology

This research used exploratory, qualitative methods to examine to what extent FBFs represent change in the food system. In order to assess this overarching question, I studied the values (RQ1), practices (RQ2), and relations (RQ3) of FBFs farmers in both a U.S. and a European context, and to what degree they are part of a broader social movement (RQ4).

Conducted in two phases, this research began with an online survey distributed via snowball methods in each country, followed by semi-structured interviews with a total of 33 farmers selected from among survey participants and recommendations of informants. The survey enabled data collection from a larger number of respondents on their farming practices, networks and ideals, while the interviews allowed for an in-depth characterization of the motivations behind these practices. These methods enabled an exploration of the tensions and congruencies between values, practices and relations. In addition, semi-quantitative data collected by the survey facilitated comparison between farmers in the U.S. and the Netherlands, and the placement of farmers' values, practices and relations along the two axes of salience and embedding described above.

I chose to take a comparative approach for this research, investigating farmers in both a U.S. and a European context in order to allow for a broader perspective. While the nature of this research makes generalizations difficult beyond the study sample and context, this international perspective will provide an important first step in further explorations of to what extent farming styles of FBFs converge or diverge in different settings, and across international borders and cultural divides.

This chapter will describe each component of data collection and analysis methodology in detail, beginning with a description of the study site.

Study Site

This research examined two different contexts as case studies: the U.S. state of Maryland and the country of the Netherlands. Both Maryland and the Netherlands are regions of a similar size (approximately 32,000 Km^2 and 41,000 km^2 respectively) with a diverse agricultural industry.

These study sites were chosen because their parallel agricultural history creates a context in which farmers face similar pressures and opportunities. Both study sites are examples of highly developed economies with a strong agricultural industry. While on different continents and subject to different political and cultural influences, both the Netherlands and the U.S. mid-Atlantic region share similarities in recent agricultural trends. Both locations have seen heavy industrialization of agriculture beginning in the later half of the 20^{th} century. Agricultural consolidation has been a prominent trend in both locations, leading to a decreasing number of farms as small farms struggle to compete. However, in both contexts, much of the landscape exists in the urban-rural interface, allowing for small-scale farmers to explore new methods for survival, such as direct to consumer sales or diversification of farm activities into care farming or agritourism. While some

strategies, such as community supported agriculture and sales at local farmers markets, seem more prevalent in the U.S., other strategies, such as Care Farming are more common in the Netherlands. In both contexts, new entrants to agriculture face similar barriers: quickly rising land prices, and limited access to capital and credit. Yet, despite this, there is strong anecdotal evidence in each location for an emerging community of new agriculturalists (Dewey, 2017).

The mid-Atlantic region, of which Maryland is a part, captures a wide variety of farming scales and approaches. Although farms in Maryland are generally small compared to many farms in the mid-western states, it is possible to find farmers growing commodities for animal feed such as corn and soy on thousands of acres, alongside small-scale diversified fruit or vegetable operations. Maryland's top agricultural products by value include (1) poultry; (2) grains, oilseeds, dry beans and peas; (3) nursery and greenhouse crops; (4) dairy; and (5) vegetables (United States Department of Agriculture [USDA], 2012). Maryland's poultry industry is dominated by indoor boiler chicken operations clustered on Maryland's eastern shore. While Maryland is home to both large and small farms, the average size of a Maryland farm is approximately 67 ha (166 acres), and 54% of all farms in the state are under 20 ha (50 acres). The urban density within the mid-Atlantic region has allowed small-scale, diversified farms to thrive, and in fact farm's selling direct to consumer exist in all counties of the state. Maryland has the fifth highest land prices of any U.S. state with an average value of $75,429 per acre ($186,310 per hectare) (Frohlich & Kent, 2015), with agricultural land estimated at an average of $7,000/ acre ($17,290/hectare) (National Agriculture Statistics Service [NASS], 2015). The average age of the Maryland farmer has been steadily increasing, and reached 59 in the 2012 census (USDA, 2012). The levels of young and beginning farmers in Maryland are slightly lower than the nationwide average. Sixteen percent of principle operators on Maryland farms are beginning farmers (national average 18%); and 4.9% of Maryland farmers are under 35, below the national average of 5.7% (USDA, 2012). To my knowledge, there is no existing data on exactly how many first generation farmers are practicing in Maryland.

The Netherlands represents one of Europe's most heavily industrialized agricultural nations. The small country is the second largest global exporter of agricultural goods by value in the world (Viviano, 2017). Although only slightly larger than the state of Maryland, the Netherlands has over 76,000 farms, compared to Maryland's approximately 12,000 (Statistical Offices of European Communities [Eurostat], 2012; USDA, 2012), and high-tech industrial operations, coexist with small-scale family farms. The top industry by value is the horticulture industry, but dairy dominates in terms of number of farms. Despite the industrial and global focus of the country's top agricultural producers, the average farm size is only 25.9 ha, smaller than the average farm size in Maryland. In the Netherlands, only 3.9% of farmers are under 35, which is well below the E.U. average of 6% (Eurostat, 2012). The Netherlands boasts the highest agricultural land prices in the EU, averaging €57,900/hectare in 2017 (Verbeek, 2017).

Although the type of agriculture in each location may on the surface seem different, both locations have seen a push for agricultural sustainability, increasing

environmental regulations for farmers, and an effort to support young or beginning farmers. Together, these two locations provided a broader perspective on FBFs in developed economies, and aid an assessment of to what extent FBFs represent ideals that are part of a larger movement.

Study Population

Participants in the study were selected to meet the following criteria:

- Self-defined "farmers." This allowed participants to set a broad definition of what constitutes a farm, with survey responses from a range of enterprises including small urban farms on less than a hectare of land, to rural farm-businesses on over 100 hectares.
- Farmers with a leadership role, either managing a farm, or component of a farm's production activities (e.g. livestock manager).
- Beginning farmers with less than 15 years of experience. While I promoted the study criteria as beginning farmers with less than or equal to 10 years experience, a few survey and interview respondents revealed that they actually had more experience. I included these respondents in analysis if their total farming experience was less than 15 years, recognizing that the difference between someone who has 10 and 12 years experience is likely to be little. The experience of a farmer was taken into account when analyzing both survey and interview data.
- First generation farmers, defined as not having taken over a family operation. A few participants had come from farming families, but for various reasons had chosen to establish a different farming operation elsewhere. I considered these farmers as first generation farmers, because in establishing a different type of operation on new land they experienced many of the same challenges as those without family backgrounds in agriculture.

Sampling

Because there is no comprehensive, existing list for first generation, beginning farmers, I used contacts with variety of organizations to help distribute the e-survey using a snowball method, including agricultural extension services, farmers unions, local associations, young farmer organizations, and training programs. While this automatically biased the sample towards farmers that are connected to some sort of organization, an effort was made to ensure that collectively the organizations represent both conventional and alternative agricultural producers. A total of 30 organizations (15 in each study site) offered to help distribute research information to varying degrees. Appendix 1 lists the organizations contacted and the action they took to promote the research. It is important to note that I was more successful at gaining the support of organizations that catered to all farmers, whether conventional or alternative, in the U.S. than in the Netherlands. Nearly all the organizations that were most proactive in distributing the survey in the Netherlands had a decidedly ecologically-oriented perspective. In order to compensate for this bias, I employed a second sampling strategy of using personal contacts, an online presence through a website and blog, and suggestions from other informants to recruit farmers to participate. In this way I could recruit farmers deliberately who may be from an underrepresented population. In addition to organizational

connections, I personally contacted 46 U.S. farmers and 71 Dutch farmers to recruit participation in either the survey or the interviews. Just over half of these contacts responded, many of whom went on to participate in the research, although some clarified that they did not meet the study criteria, or did not have time to participate.

The survey was distributed in English in Maryland and Dutch in the Netherlands, and was open for a period of 3 months in both locations (18 October 2017 through 17 January 2018). Research promotion in the Netherlands was conducted in English and Dutch. The English survey was initially translated into Dutch by two native Dutch speakers and edited and revised by two additional native Dutch speakers, including a language instruction professional, with particular attention given to ensuring consistent meaning of each question in both the English and Dutch surveys.

Survey respondents were given the option of indicating their interest in participating in a follow-up interview, and Dutch respondents were asked to indicate their comfort level in interviewing in English. After the survey was open for a period of three weeks, informants for interviews, beginning with the U.S., were selected from among completed surveys, using a strategic approach to sampling as described by Trost (1986). Rather than creating a statistically significant sample, this method helped ensure a more emblematic view of the study population by selecting respondents that are representative of the demographics of survey responses in terms of farming scale, products produced, gender, ethnicity, age, level of experience, and use of organic practices. In addition, as the interviews progressed, participants and organizational contacts were asked for their advice on additional farmer contacts. Several interview participants were recruited directly, and four of these participants did not complete the survey. The interview period lasted for one month in each study site, and as survey responses continued to roll in, they were used to check and confirm a representative sample of interviewees.

Email Surveys

A survey implement was designed and distributed using Qualtrics online software to collect data on all four research questions. Drafts of the survey were pretested with three farmers selected from my personal network. Their input was used to ensure comprehension, refine questions and gauge receptiveness for participation. Pretested surveys were not included in data analysis. The survey was designed to collect responses to closed questions that serve three purposes. Firstly, section 1 of the survey helped characterize the farm and farming practices (demographics, experience, crops/livestock produced, scale, household income percentage, marketing practices, and use of organic methods). This section was used in the strategic sampling method described above. Secondly, section 2 of the survey provided information on the size and scope of the farmer's network (organizational connections) for RQ4.1. Finally, the final section of the survey consisted of a series of 11 Likert-style items that collected ordinal data to help place respondents practices and relations along a spectrum of embeddedness. Respondents were asked to position their current and ideal activities on a sliding scale between two opposing statements representing either end of the spectrum of agricultural paradigms in

Figure 1, with positions of zero interpreted as the productionist ideal, and positions of 100 as the agroecological ideal. Asking respondents to position both their current and ideal activity helped reveal to what extent values aligned with practices (RQ2), and when they did not, in which direction farmers wanted to shift (RQ1). After completing all items, respondents were asked to distribute 100 points among them to indicate the relative importance of each item. This allowed for a series of data points that could be placed on a salience-embeddedness plot. Appendix 2 contains the full survey.

The survey generated 95 survey responses that met the study criteria and were included in the analysis, including eight partial survey responses that were complete at least through the first survey section on basic farm data. Partial responses that were not complete at least through section 1 were excluded. Of these responses, 57 were from the U.S. and 38 from the Netherlands. The survey also generated an additional six responses from other neighboring European countries (interestingly, most completed in Dutch), and seven responses from farmers with over 15 years of experience in their current role. These 13 responses were not included in the analysis. Of the 57 U.S. responses, five were from the states neighboring Maryland: two from Virginia, and one each from Pennsylvania, West Virginia and Delaware. These responses were included in the analysis and two were even selected for interviews because the regional farming context does not vary considerably between Mid-Atlantic States. In fact, these respondents often sell to the same markets as other Maryland respondents.

Interviews

Over the course of November 2017 and December 2018, I interviewed 18 first generation farmers in the U.S. and 15 in the Netherlands for a total of 33 interviews. Most interviews were conducted in person, individually or with the farmer's business or romantic partner present. In one case, an interview was conducted jointly with two farmers from different farms: a first generation farmer and a farmer who had recently taken over a family operation. In this case, responses from the multi-generation farmer provided a reference point and interesting fodder for conversation, but were not included in the analysis of first generation farmer data. I let participants choose the location of the interviews if not conducted at the farm, and thus, they set the boundaries for who was present. Two U.S. interviews and three Dutch interviews were conducted over the phone or via Skype due to scheduling or logistical difficulties.

Each interview followed a semi-structured format, and collected data on all four research questions, with a particular focus on the farmer's motivations and path to farming, conceptions of a good farmer, and challenges faced. While I used a list of prompts and questions to guide the conversation (Appendix 3), I also let each conversation flow naturally, focusing on elements that seemed the most interesting or relevant to each participant. Thus, not every question was asked in every interview, and the order of questions varied. Interview times ranged from 35 minutes to two hours with most interviews lasting about an hour. I made an effort to try to cap interviews at an hour in order to respect participants' time, however,

some informants were naturally more talkative than others. Of all the survey responses, only three respondents who indicated that they wanted to do an interview, also signified that they were not comfortable conducting the interview in English. All three of these respondents were offered the opportunity to interview with a Dutch-speaking interpreter, and one accepted. Thus, all interviews were conducted in English, with the exception of one interview, which was conducted in Dutch with the help of a native Dutch-speaking volunteer. The volunteer was trained by the researcher prior to the interview, and the researcher was present for the interview for guidance as needed, although the conversation took place entirely in Dutch as this enabled the most fluid conversation. After the Dutch interview, the recording was reviewed and orally translated into English, before being transcribed for analysis. Interviews were all recorded after gaining permission from participants and the data was transcribed verbatim.

Table 1 lists interview participants by code name and a brief farm description. Table 2 shows the criteria that were used to select a diversity of survey respondents, including income, farm type, gender and practices, and the percentages of survey and interview respondents in each category. Notably, the interview participants in the United States represent more diversity in farm type and approach than those in the Netherlands. In order to try to select both ecologically oriented farmers and those that might have a more conventional approach, I used data from one of the survey questions that asked farmers to check if they used organic or biodynamic practices or 'none of the above.' I incorrectly assumed that those who checked 'none of the above' would be more conventionally oriented farmers. In fact, the two participants in the Netherlands in this category who agreed to interview, both turned out to be farmers inspired by permaculture, a set of agricultural practices that typically goes well beyond the minimums of environmental sustainability established by organic certification. Thus, all of the interview participants in the Netherlands had some sort of organic approach. Many of these farmers were not certified organic, or did not necessarily identify with the organic movement, yet they were using practices that deliberately avoided synthetic inputs.

Table 1: Farm descriptions for each interview participant. An "O" in the methods column indicates that the farm used some level of unmapped organic methods. This applies to any farm that did not use synthetic inputs, including both those with or without organic certification. A "C" indicates conventionally managed farms. Small scale refers to farms under four ha, midscale signifies farms between four and 40 hectares, and large-scale farms are > 40 ha.

Code	Description	Methods	Code	Description	Methods
United States			**Netherlands**		
MD1	small scale, flower farm	O	NL1	small scale, diversified vegetable farm	O
MD2	small scale, diversified vegetables.	O	NL2	mid-scale diversified vegetable farm	O
MD3	mid-scale farm producing flowers and value-added products, preparing to add dairy goats and other livestock.	O	NL3	small-scale, diversified vegetable farm	O
MD4	small scale farm, producing diversified vegetables and chickens.	O	NL4	mid-scale diversified, permaculture farm with produce and livestock	O
MD5	small scale, diversified vegetables, flowers and livestock.	O	NL5	small-scale, food forest and vegetable production, with livestock	O
MD6	small scale farm specializing in flower and egg production.	O	NL6	small-scale, diversified vegetable farm	O
MD7	small scale, urban flower farm.	O	NL7	large-scale, arable farm, producing predominantly vegetables	O
MD9	4th generation farmer, mid-scale, conventional farm, not included in analysis	**C**	NL8	small-scale, permaculture farm in the planning stages. Plans for both crops and livestock.	O
MD10	small scale, flower farm.	O	NL9	small-scale, diversified vegetable farm	O
MD11	goat dairy producing artisnal cheese from their own goat milk, as well as milk from other local farmers.	O	NL10	small-scale, diversified vegetable farm	O
MD12	mid-scale, diversified vegetable farm	O	NL11	small-scale mixed farm with a focus on herbs	O
MD13	mid-scale, diversified livestock and vegetable production.	O	NL12	small-scale, diversified vegetable farm	O
MD14	mid scale orchard and vegetable production	**C**	NL13	small-scale, diversified vegetable farm	O
MD15	small scale, specialty vegetables	O	NL14	small-scale, diversified farm	O
MD16	mid-scale, cow dairy	**C**	NL15	small-scale, permaculture farm with crops and livestock	O
MD17	small scale, diversified vegetables	O			
MD18	mid-scale diversified farm with livestock, crops and value added	**C**			
MD19	mid-scale specialty dairy and farmstead cheese producers	**C**			
MD20	mid-scale, diversified, vegetable farm	O			

Table 2: The criteria used to select a diversity of interview participants, and the percentage of survey respondents and interview participants in each category.

US Respondents												
	Farm Size			Gender		Farm Type			Age of Operator		Experience	
	<4 ha	4-40ha	> 40 ha	male	female	Crops	Livestock	Mixed	<=40	>40	<=5 years	>5years
% of Survey respondents	77	19	4	35	65	63	5	30	63	37	67	33
% of Interview participants	61	39	0	22	78	50	17	33	61	39	44	56
	Location within Maryland					Farm's Contribution to Household Income Percentage			Pratices		Race	
	South	East	Central	West	Outside MD	>75%	<25%	25-75%	Conven-tional	Unmapped Organic	White	Non-White
% of Survey Respondents	14	12	55	8	10	25	53	23	40	60	94	6
% of Interview Participants	11	11	61	6	11	33	39	22	22	78	94	6
Dutch Respondents												
	Farm Size			gender		Farm type			Age of operator		Experience	
	<4ha	4-40ha	> 40 ha	male	female	crops	livestock	mixed	< or = 40	>40	<5 years	>5years
% of Survey Respondents	65	21	16	66	34	61	11	26	63	37	76	24
% of Interview Participants	87	7	7	47	53	67	0	33	67	33	73	27
	Location within the Netherlands					Farm's Contribution to Household Income Percentage			Practices		Ethnic Minority?	
	West	Central	North	South		>75%	<25%	25-75%	Conven-tional	Unmapped Organic	No	Yes
% of Survey Respondents	24	58	12	6		41	16	43	16	84	97	3
% of Interview Participants	20	60	20	0		33	20	40	0(13*)	100(87)	100	0

*Participants were assumed to be conventional if they checked "None of the Above" to survey question 14 asking about their farming practices (see Appendix 2). In this case, both of the participants who checked this box in the Netherlands were not operating conventional farms, but actually practicing some form of permaculture. Thus, this percentage is actually 0.

Data Analysis

This research resulted in several types of data, including interview transcripts, and quantitative responses to closed questions on the survey. Interview transcript data was coded using Atlas.Ti, and arranged into categories following an inductive analytical approach. After transcribing each interview, initial observations were noted. Subsequently, each interview was coded following an iterative process, as codes were added or refined with each subsequent interview. Interviews that were coded first were then reassessed to apply new codes. Codes and categories were visually mapped to determine linkages and to identify general themes. After coding, interview data was viewed through the lens of the two axes of embeddedness and salience described above. This framework provided a useful heuristic for assessing the overall research question.

Semi-quantitative data from the survey was downloaded from Qualtrics and analyzed in Excel and SPSS. These data provided descriptive statistics on farm demographics, marketing, growing practices and networks. These data were first analyzed collectively, and then individually for various categories, in particular U.S. respondents, Dutch respondents, farmers using conventional inputs, and those that did not. In certain instances, I also looked at how the data varied between farmers of different age and experience level. Finally, data from section 3 of the survey was plotted along the axes of salience and embeddedness. Because this data is ordinal, the absolute values reported by one respondent are not necessarily comparable with those of another. Thus, this data was assessed by looking at the difference between ideal and current practices and the direction of the desired shift, rather than the quantity of each value reported.

Statistical analyses of survey data were preformed in SPSS to assess the significance of differences between data categories (e.g. the U.S. and the Netherlands, or current or ideal slider positions). It's important to note that the statistically significant differences observed in this research are not generalizable to the larger population, but rather only apply to the study sample. Thus, I employed statistical analysis strategically in order to better understand values that were different, but close, and data with large variances that made it difficult to determine how much weight to place on differences when looking at means alone. In particular, I assessed if farm size, type, and income characteristics varied significantly by country. Primarily, I used statistics to explore the survey slider questions: differences between ideal and current positions, and differences between countries. All ordinal and continuous data was first tested for normality to inform which test to use. In almost all cases the data was not normally distributed. The Mann Whitney U test was thus used to compare means between U.S. and Dutch slider positions, and farm size. The Wilcoxon's Signed Rank test was used to compare means between current and ideal slider positions, due to the paired, nonparametric nature of the data. Finally, a Mann Whitney U test was used to compare income characteristics by country, and a Fisher's Exact test was used to determine the relationship between country and farm type. All tests were preformed with a confidence level of 95%, and a significance value set at $p<0.05$.

The impact of age and experience on farm size and additional income levels were also examined by making scatter plots. No additional analyses were preformed, as scatterplots did not show any signs of a relationship.

Ethics and Community Access

Ethical risks of this research included the collection of personal and potentially sensitive information, a time commitment that asked too much of respondents while giving too little in return, and bias of the methods or researcher. Several measures were taken to minimize ethical risks posed by this research, including informed consent, anonymous reporting of data, and transparency about research objectives. Prior to starting the survey, all participants viewed an informed consent letter outlining the research aims, data collection methods, type of questions, length of time required and the voluntary nature of their participation. The letter also stipulated that all data would be reported anonymously, and participants could opt

to complete the survey without leaving any identifying information. Participants needed to indicate their affirmative agreement prior to beginning the survey. Those who did not indicate agreement were not permitted to take the survey, and were redirected to a page thanking them for their interest. The informed consent letter can be seen in Appendix 2.

Interview participants were informed of the research aims and interview process and promised anonymity at the start of each interview. Permission to record was always gained via oral agreement before the recording device was initiated. In order to maintain confidentiality, all interview participants were given an identifier code, and quotes are reported with the anonymous code throughout this thesis. Moreover, an effort was made to ensure that quotes that may inadvertently reveal the farmer's identity by sharing information on location or unique practices are not reported in the text.

In order to ensure transparency, a website that provides an overview of the research, a link to the e-survey and researcher contact information was provided to all participants at the initiation of contact. In order to avoid a potential reactionary dynamic among participants, the research aims were described as to provide an in-depth characterization of the motivations, values, practices and challenges of first generation farmers. I did not publically disclose the overall research question of assessing to what extent first generation farmers represent a shift in agricultural paradigms.

Finally, another ethical risk of this research was that it asked a substantial time commitment from participants, but potentially gave little in return. Those who participated in both the survey and interview, often donated two hours or more of their time. While the survey provided a raffle incentive to any interested participants for a gift card, participants were not compensated financially for their time. Thus, in order to give something back, findings will be communicated with participants by sharing this report, and a summary, in English and Dutch. Moreover, when scheduling interviews I let participants determine the best schedule and location for the interviews in order to accommodate their schedules.

It should also be noted here that my previous work both as a beginning farmer, and with beginning farmer communities in Maryland gave me unique access to this community that was both an asset and a potential limitation. My personal connections in Maryland from previous professional work with farmers gave me easier access to several organizations that helped distribute my survey, perhaps in part because they knew me. In addition, five interviews in Maryland were conducted with farmers that I had known previously. On the one hand, this was a benefit, as these conversations were often longer, more fluid and more open than other interviews. On the other hand, this could also be a drawback, as these participants may have assumed to know my values and may have in some cases tailored their responses to what they perceived I wanted. In some cases, participants may have chosen not to explicitly state their own values, because they assumed I already knew them. In order to mitigate this dynamic, I tried to maintain a neutral stance in my presentation of the research, and phrasing of my questions, and asked probing

questions to draw participants out when necessary. Overall, while all participants likely reacted to my presence and made assumptions about my values, I did not get the impression that any participant misrepresented their practices or values in reaction to me. Poorly conducted research always risks mischaracterizing the study population, and perpetuating myths and bias about agriculture. I will address these risks further in the limitations and strengths section of the discussion (Chapter 7).

Chapter 4: Meaningful Work

Introduction:

The farmers involved in this research came to farming from a variety of pathways. For some farming was a second career after working in education, law or research: a chance to work outside and do something applied. For others, farming gradually became their calling after discovering an enjoyment of gardening or a passion for the environment. Participants had past careers that included work as researchers, attorneys, teachers, pastry chefs, social workers, physical therapists, environmental consultants, and even one farmer who works part time at NASA. About a quarter of interview participants were also on their first career, and had started farming shortly after university.

Despite these varied backgrounds, beginning, first generation farmers in both countries displayed remarkable similarities to each other and distinct differences from the general agricultural population. In interviews, respondents emphasized the importance of the business of farming, while often displaying a strong ethical positioning and a search for meaningful work. The farmers interviewed face a variety of challenges many of which are similar to the previously documented challenges faced by young or beginning farmers, including land access, finances, and knowledge. In response, they have developed a range of innovative solutions to circumvent these challenges including strong networks, farm diversification, collaboration, and application of appropriate technologies. The following chapters, 4 through 6, will present the results from this thesis, organized by four key themes that emerged in the interviews: (1) farmers' search for meaningful work (2) their strong business ethic, (3) challenges faced, and (4) solutions employed. In this Chapter, I will first give an overview of the general farm characteristics of survey respondents, followed by a discussion of first generation farmers' search for meaningful work. In Chapter 5, I'll discuss how the values that give their work meaning are balanced with a strong business ethic. Finally, in Chapter 6, I'll discuss the challenges faced by first generation farmers and solutions found.

At a Glance: Doing Things Differently

Beginning, first generation farmers in the Netherlands and the US displayed more similarities in scale, farm type, practices and values than differences. Participants are operating predominantly small scale, diversified, farms with a focus on annual vegetable and fruit production. Although the largest farm surveyed had 135 ha in production in the Netherlands, the size distribution was heavily skewed towards the smaller size classes in both countries, with a median farm size of 0.81 productive hectares for all respondents. Farms in the Netherlands tended to be larger than farms in the U.S., with a median size of 1.5 and 0.51 productive hectares respectively. The difference between the sizes between countries is statistically significant as calculated by the Mann Whitney U Test (U: 756; p: 0.013). It is important to note that U.S. respondents reported their production area in acres, while Dutch respondents used hectares. While all data was converted to hectares for

analysis, the observed size difference between the two countries may be due in part to reporting bias, as respondents may have a greater tendency to round up if the unit of measurement is larger.

Nearly two thirds (62%) of survey respondents in both countries are operating arable farms with only crops, while 28% operate mixed farms with crops and livestock. Only 8% operated livestock only farms. Chickens, primarily for eggs, were the most commonly raised livestock. These percentages are remarkably similar between the U.S. and the Netherlands, and do not differ significantly between countries, as assessed by the Fisher's Exact Test ($p = 0.461$) (Figure 3). Most farms were diversified with 72% of respondents producing over 10 distinct products or crops.

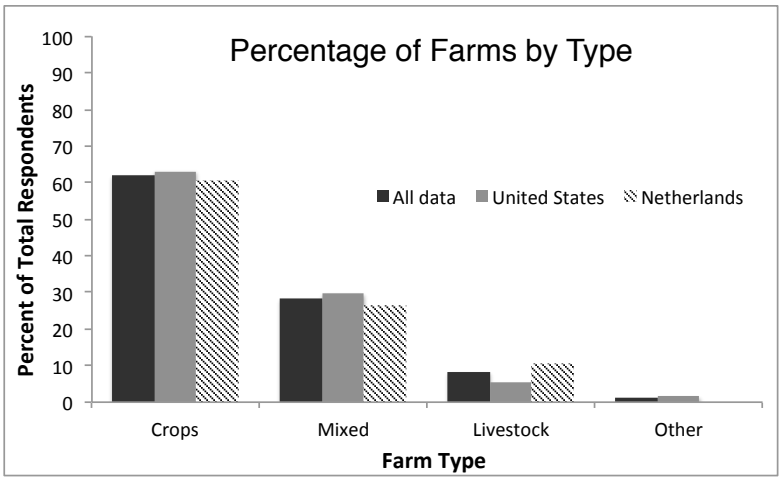


Figure 3: Farm classification of survey respondents by percentage of total respondents.

Annual produce and fruit was the most important product category in both countries, with 67% of respondents rating this category as one of their top three most important products, and 58% of respondents ranking it as number one. Other important crops include herbs, perennial produce and fruit, and ornamental flowers (Figure 4).

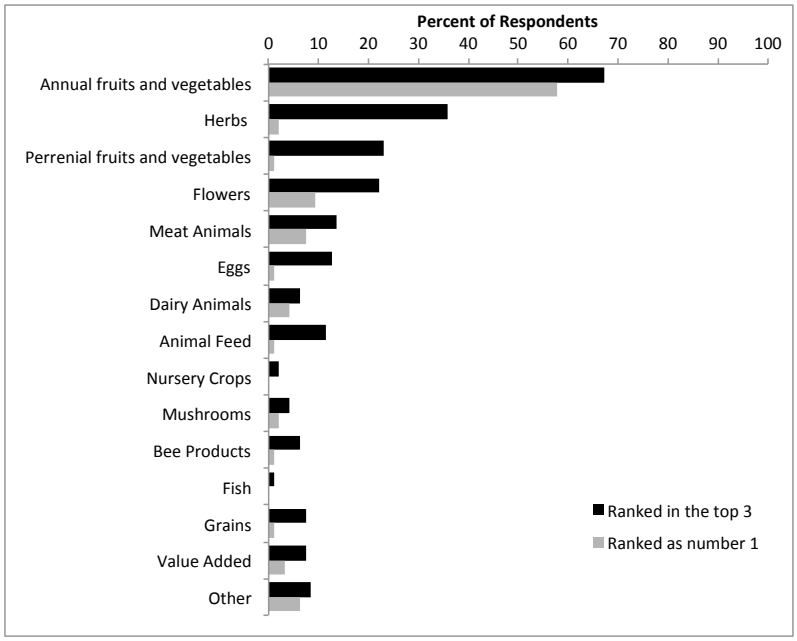


Figure 4: Most important agricultural products by value for survey respondents. Black bars represent the percent of respondents that ranked that product within their top three most important product, while grey bars represent the percent of respondents that ranked that product as their most important product.

About 71% of all respondents reported using organic or biodynamic methods, 42% of whom were certified. The proportion of respondents using organic methods was greater in the Netherlands than in the U.S. (84% compared to 60%). This trend also extended to those that were certified organic. This may be due in part to sampling bias, as I was far more successful at gaining the assistance of conventionally oriented farm organizations to help promote my research in the U.S.

In both countries, respondents commonly utilized multiple types of sales, predominantly concentrated in short supply chains. Direct to consumer sales were the most important marketing strategy, with 86% of respondents ranking this strategy as one of the top three most important sales outlets. In fact, 69% of all respondents ranked direct to consumer sales as their most important supply chain; and in both countries. The number of respondents who sold through longer supply chains was relatively low: only two percent ranked selling to a distributor and four percent ranked selling to a processor as their most important sales outlets. It was also common in both countries for farmers to have income derived in some other way than the sale of agricultural products. Income from multifunctional farm activities (i.e. educational courses, care farming, etc.) was earned by 41% of respondents, and 81% had additional household income. Only 12% of all respondents did not report any other sources of income. The percentage of income self-sufficient respondents was higher in the Netherlands (18%) than in the U.S. (4%). Farmers in the U.S. had a significantly greater reliance on additional household income than farmers in the Netherlands, as calculated by the Mann Whitney U Test ($U= 605.5$, $p = 0.000$) (figure 3). This test was preformed by substituting the values zero through four for the ordinal income proportion categories selected by respondents (as shown in figure 3), and comparing the mean values between the U.S. and the Netherlands. Although, more Dutch respondents

appeared to have multifunctional farm income than U.S. farmers, the same testing procedure revealed this difference was not statistically significant (U = 876, p = 0.103). (Figure 5).

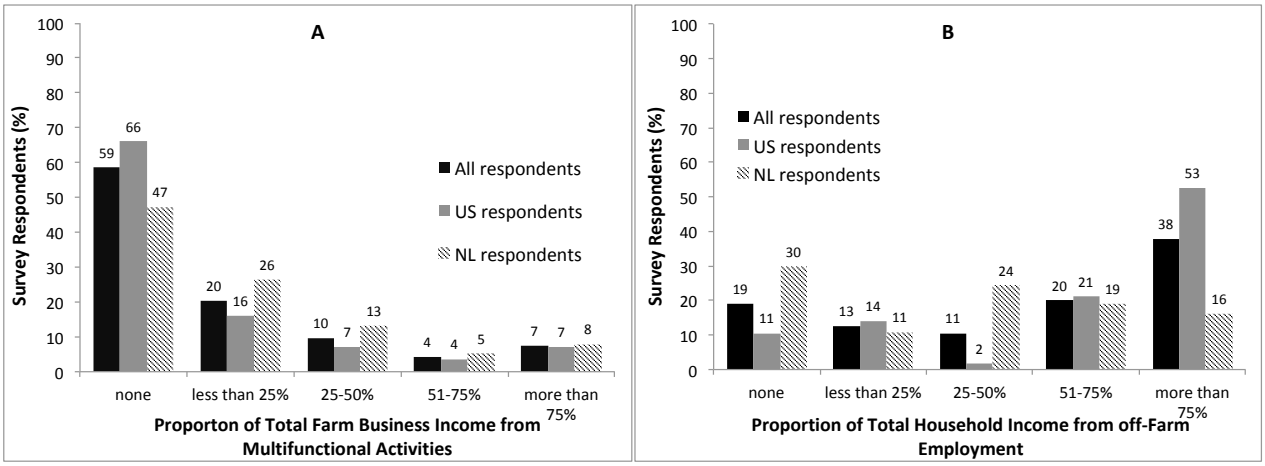


Figure 5: Additional income among survey respondents. A. The proportion of total household income from off-farm sources (e.g. second jobs, partner's income). B. The proportion of farm business income from multifunctional activities (e.g. agritourism, care farming).

The average age of respondents was 39 in both the Netherlands and the US, and 63% of respondents were young farmers under age 40. In both countries, it is evident that 'beginning farmer' need not mean young farmer. However, the U.S. had a significantly higher proportion of female respondents than the Netherlands, with 65% of U.S. respondents being female compared to only 34% in the Netherlands.

Overall, beginning, first generation farmers in the Netherlands and the U.S. show remarkable similarities: operating small-scale diversified farms, using sustainable methods, with a focus on vegetables and fruit production. However, while similar to each other, the study population in both countries showed distinct differences from the general farming population (Table 3). In both locations, respondents were generally operating farms well below the average size. Moreover, the study population displayed a much higher proportion of diversified vegetable and fruit farms than is typical of the general farm population in either area. For example, while dairy farms are the most prevalent farm type in the Netherlands, only four respondents (11%) reported operating cow dairies. In Maryland, only 6.5% of all farms in the state grow annual vegetables and fruit, yet just over half of survey respondents listed these products as their most valuable product. Additionally, a much higher percentage of respondents in both countries sold through direct to consumer channels than the general farming population (Table 3) (USDA, 2015; Sukkel & Hommes, 2009).

Table 3: Comparison Statistics between Survey Respondents and General Farm Population in the U.S. and the Netherlands. *Direct sales includes farmers who not only sell directly to consumer, but also through other short supply chains, such as direct to retail or restaurants.

Criteria	MD respondents	MD general	US general	NL respondents	NL general	Source
Farm size (average)	11 ha	67 ha	176 ha	18 ha	25.9 ha	USDA 2012 Census; Eurostat,

						2012
Farm size (median)	4.1 ha	21 ha	32 ha	2.1 ha	15.6 ha	USDA 2007 Census; Piet, 2016
Farm area in production (median)	0.51 ha	--	--	1.5 ha	--	
Dominant product by value	Annual vegetables and fruits	Broiler chickens	Cattle and calves	Annual vegetables and fruit	Indoor horticulture	ERS, 2016; Eurostat, 2012
% female operators	65%	32%	30%	34%	4%	USDA, 2012, Eurostat, 2012
Age, average	39	59	58.3	39	--	USDA, 2012
Percent of total farms, certified organic	14%	1%	0.7%	50%	1.5%	USDA, 2014; Eurostat, 2012
Using direct sales*	96.5%	14.8%	5.3%	95%	30% of all organic farmers. No general data	USDA, 2015; Sukkel & Hommes, 2009

It is interesting that the U.S. shows a higher percentage of female respondents than the Netherlands, however, this is in line with observations of a growing trend of women in agriculture in the U.S. (Masterson, 2011; Dewey, 2017). In both locations, study respondents showed a far greater proportion of women than the overall farming population. Thus, first generation, beginning farmers seem to be closing the gender gap in agriculture.

The Search for Meaningful Work

The structure of the farms described above results from the practical constraints that first generation, beginning farmers face, the business landscape, and their values. Most farmers in this research were driven by a strong set of principles that they view and evaluate through the lens of business. I'll turn first to a discussion of these values, and then, in subsequent chapters I'll elaborate on their business ethic, and the practical constraints. There was substantial heterogeneity among the sample: a value of primary importance to one farmer was often unimportant to another. Without obscuring the personal nature of individual value systems, there were a number of values that reoccurred throughout the conversations. In particular, all farmers shared enjoyment of particular aspects of the farming lifestyle, such as working outside, or being their own boss. Moreover, most of the farmers interviewed expressed an environmental ethic, including a concern for land stewardship, soil health, and reducing waste. Other values that occurred in multiple interviews included feeding people, contributing to a local economy, educating others and building community.

Farming Lifestyle

Throughout the interviews, participants often referred to farming as a "lifestyle," rather than a job. The values that compose this lifestyle became apparent through their discussions of what farming entails and what they enjoy. The farming lifestyle is one that involves a strong work ethic and requires a diversity of skills,

necessitating creativity and a knack for problem solving. It is also a lifestyle of working outside, connected to the land, and the natural rhythm of the seasons. Finally, there is an element of self-determination, "being your own boss," and improving personal self-sufficiency in this lifestyle.

Workload & Work Ethic:
The idea that farming is hard work is deeply entrenched in our cultural attitudes about agriculture, thus, it may come as no surprise that the workload and work ethic of farmers was a frequent topic of conversation. About three quarters of the farmers interviewed discussed their workload, both in an observational tone recounting long days, or, specifically, as a challenge they faced. Most often, farmers discussing workload as a challenge were trying to balance other priorities such as an off-farm job or parenting. These details were often delivered with both a sense of pride and exhaustion, and frequently the work ethic of farmers was cited as an essential prerequisite for being a good farmer. This strong work ethic was often a source of respect for older or traditional farmers, thus forming a bridge between very different farming styles. All the same, a few participants actively expressed a desire to fight against the image that farmers need to work tirelessly for little money.

Working with Head and Hands:
The diversity of skills required, the constant learning process, creativity and the problem solving involved in farming were some of the most commonly cited sources of enjoyment in agriculture. While many of these skills are those required by any small business owner, farming offered the unique opportunity to hone both mental and physical skills. Interview participants were highly educated, some at the masters and doctorate level, and appreciated that farming offers an opportunity to work both intellectually and physically. For some the pathway to farming took them out from behind a desk where they had found themselves longing for the outdoors. As one farmer described to me, she was thrilled to discover that agriculture was not only physically demanding, but intellectually so:

> *"I like doing something with my head, because that's the bad thing about doing physical work, usually. I, like you, am educated and I want to do something with the knowledge that I have, and I have the opportunity now to combine both." NL4.* [1]

Moreover, the ability to be a jack-of-all-trades in addition to that of grower also commonly reoccurred in participants' descriptions of 'good farming' or of farmers they admired. As one farmer described the joy and pride she felt when designing her own chicken coop:

> *"…As a farmer, you are all of the things, you are a soil scientist and a veterinarian half the time and all these other things. You know, not really, but you act all these roles, but you can also be an inventor." MD4*

[1] All quotes in this research are reported directly from the interview recording. Grammatical oddities in spoken English are retained in order to remain true to the voice of the speaker.

Being the Boss:
Another common attractive point in the farming lifestyle was the self-determination that comes with operating a small business. Participants took pleasure in setting their own schedules, making decisions, and solving problems. This is intrinsically related to the view of farming as a business that will be discussed in the next chapter, and reinforces their entrepreneurial identity. Only one farmer explicitly said that he did not identify with this entrepreneurship role, and he says that partly, the diversity of tasks he needed to do as a farmer, led him to the recent decision to stop farming after this season. For some farmers, self-determination extended beyond the benefits of traditional business ownership to encompass enhanced personal self-sufficiency through home-based food production. This was seen as an important act to create resilience both for themselves and their communities. As one such farmer described her decision to move from garden to commercial farm:

> *"It's nice that if the financial system collapses you have your own food, but if the rest of the village is starving it's sort of not really sufficient because probably the people of the village will come and loot your plot." NL14*

Even for farmers who did not aim to increase community resilience through self-sufficiency, the freedom and flexibility gained through self-employment was highly valued due to both the enhanced sense of self-determination and a more flexible lifestyle.

Working Outside:
Finally, along with working physically, over 60% of the farmers interviewed specifically mentioned working outside as a key aspect of farming that they enjoy. This love of working outdoors was shared by U.S., Dutch, organic and conventional farmers alike. Working outside led farmers to feel connected to the land and the seasons.

In sum, this cohort of agriculturalists is not necessarily seeking a simpler life through farming, but a more balanced life, in which they exercise their mind while still using the body. Although farming has always been intellectually demanding, these new farmers are challenging a deeply ingrained stereotype of farming as a career that is abandoned with increasing education. The education level, past careers and diverse life experiences, coupled with their enthusiasm for in depth thinking, implies that this new population of farmers may bring new ideas to agriculture. In fact, the short supply chain, diversified models necessitate a greater variety of skills. At the same time that the diverse skill requirements of agriculture attract this group of farmers, many technological innovations seek to reduce the need for broad knowledge, to automate and to further specialize agriculture. The participants in this study are directly challenging the trends of increasing scale and specialization that reduce the need for diverse agricultural skills.

An Environmental Ethic
A strong environmental ethic emerged as a guiding principle in both surveys and interviews. Most survey respondents reported using organic or biodynamic

methods, and only two farmers, out of 33 interviews, did not discuss environmental concerns. In fact, about one third of interview respondents described interest in the environment as a pathway into farming:

> *"So my motivation to start in this is to practice more sustainability. Not just talking about it and writing a report, but yeah, with the hands." NL1*

Rather than asking farmers directly if they cared about the environment, interview participants were asked to describe practices they found important, and farmers they admired. In this way they demonstrated their environmental concerns by discussions of soil health, land stewardship, chemical use, agricultural diversity, water health, waste, fuel use and climate change. In this section, I'll elaborate on these aspects of farmers' environmentalism.

First, it is worth noting that certification labels alone were not an indicator of environmental ethic. Although only a minority of participants was certified organic, most farmers used some level of unmapped organic practices. The avoidance of synthetic inputs was often a baseline, with most interview participants indicating a desire to go further by designing their farms as ecosystems. For the sake of simplicity, I'll refer to the four interview participants who did use synthetic inputs as "conventional." All farmers revealed a range of opinions and ethical stances towards the certification schemes themselves, with varying rationales for participation or opt out. Organic practices were justified as a marketing decision to achieve higher premiums, a "better way to grow," or an unconscious result of being trained in organic techniques. Both farmers using organic and conventional methods would occasionally complain about hypocrisy within the organic industry, fraud, or the burden of recording keeping. A group of farmers also expressed frustration with the "conventionalization of organic," in which farms achieve certification via input substitution. Overall, interview data adds nuance to the organic and biodynamic labels reported by the survey, and reveals an emphasis on soil health and land stewardship within farmers' environmental ethic.

Soil Health

The most frequently discussed environmental concern, soil health, was considered by all but four interview participants (88%). While farmers primarily spoke of the importance of soil health in general terms, often related to productivity and long-term fertility, several participants also discussed improving soil and regenerating the land as a concrete way in which they could have a positive impact beyond the tenure of their farm.

Participants also discussed specific soil preservation strategies, of which low tillage technologies were the most commonly cited. In these interviews, small farm tools, in particular BCS-brand two wheeled tractors with low tillage implements, and flair mowers, were important for enabling such practices. Other methods that farmers mentioned in regards to reducing tillage include permanent beds, strip tillage, and occultation tarps, in which silage tarps are used to cover crop residues and hasten decomposition. Participants seemed primarily concerned with maintaining soil structure and preventing erosion through minimum tillage.

Farmers also mentioned various techniques such as cover cropping, mulching, perennial cropping, and managing fertility through agricultural diversity and the addition of animals. Generally, these internal soil-building methods were discussed with more frequency and depth than external fertilization.

Selected Quotes, Soil Health

> *"Managing the soil and growing the soil has been the basis of everything. We also mostly farm on a slope so keeping erosion from happening. Like what impact can we have on the environment in a positive way?" MD4*
>
> *"Because I think the state of soil loss in America and the world over and the dependence on chemicals that are not at all healthy for our water, and for the soil biology and for our bodies, and all of the destruction that is being done to pretty much life in general. When we consider the life of the soil, and the ecosystem, and human beings that are suffering from all kinds of things, because of the practices of agriculture that have become the way that we grow food." MD13,* when asked why he uses permaculture techniques.
>
> *"I'm working with beds that are permanent…The soil was tilled this last spring and I hope there will not ever be a big tractor over the beds again." NL9*
>
> *"I want to broad fork, I want to rake, I want to compost, and build my soil. I see myself as a soil…I want to feed the soil, which will feed my plants. So that's the part of my permaculture outlook." NL1*

The topics that were not mentioned in regards to soil health are equally interesting. Government funded soil conservation incentive programs were only mentioned in one Maryland interview, and not in a way that indicated it was of great importance for the farmer to gain the financial incentive. Moreover, participants rarely acknowledged soil contaminants, showing more concern for general fertility, building organic matter, and preserving biologically active soils.

The emphasis on soil existed both in the U.S. and the Netherlands, but there was a division between farmers that were using some level of organic methods and those who were not, with three of the four farmers that did not discuss soil health operating conventional farms. The conventional farmer that did discuss soil health was concerned with the condition of the soil when he started farming, the costs of fertilizer inputs, acquiring soil knowledge, and working on practices to maintain long term fertility. This farmer also used minimum tillage technology.

Land Stewardship

While mentioned less frequently than soil health, the more general concept of land stewardship was discussed in just over half of the interviews. Again, there was an organic-conventional divide, with fewer conventional farmers speaking in land stewardship terms.

For all the farmers who discussed land stewardship, the idea of taking care of the earth was an important tenant of being a good farmer. These participants often

spoke in general terms, contrasting their activities to the harms of industrial agriculture, or exposing a desire to leave the ground in good or better condition for future generations. A few participants also mentioned providing valuable environmental services (pollination, diversity, soil fertility) as an aspect of land stewardship. As one Dutch farmer revealed:

> *"That's what I like on farming…to produce something that is good for nature and for people. That's actually the goal for me, to produce healthy food on a fair way with the restoration of nature." – NL5*

Chemical Free

The use of sprays—either synthetic chemicals or organic materials-- arose frequently in conversations with organic and conventional crop farmers. A number of the organic respondents mentioned a desire to avoid any sprays, including those approved under organic certification, in favor of better harnessing internal-farm based resources. Some displayed a general distrust of sprays, even those labeled as organic. This was not universally true, however, with a handful of organic growers citing their use of organic-based sprays as an important management strategy. In interviews in which the subject of synthetic sprays arose, most participants indicated a choice to avoid chemicals, expressing concern for their impact on the environment, and the health of consumers and farmworkers. These concerns were echoed by the two conventional crop growers, both of whom used synthetic sprays, but spoke of their desire to reduce the impact of this practice. These two farmers revealed a general desire to reduce chemical use as much as possible through better science, such as pheromone based pest control, or different management practices. The effort to reduce sprays was not only motivated by environmental concerns, but perhaps more pressingly by the costs of the chemicals themselves, and concern for human and farmworker health. One participant also described in detail the negative public perception of chemical sprays, and their choice to only use materials that can "wash off with water."

Other Environmental Concerns

To a lesser extent, participants also expressed their environmental ethic through discussions of agricultural diversity, water health, waste and fuel use. Agricultural diversity was an important topic in just over half of the interviews. Most of these participants expressed appreciation for diversity in creating resilient ecological systems and businesses, as well as a workflow that offers greater personal fulfillment:

> *"The more diverse the operation, the better I think for our soils and the resiliency as a business." MD2*

Notably, a couple of participants who established their farms with a high degree of diversity, are now expressing a desire to become (slightly) more specialized in order to increase efficiency. These observations were made with the acknowledgement that this is a compromise for some of the environmental benefits.

In addition, water health, and a desire to reduce fossil fuel use and waste, particularly regarding plastic mulch reoccurred in conversations. Notably, concern for the health of waterways appeared more commonly in Maryland, perhaps reflecting widespread public and regulatory efforts to protect the Chesapeake Bay. For some farmers, these environmental concerns were not limited to their farming practice:

> *"And we also think a lot about [the] environment, like buying organic food, recycling things, not buying things which are made of plastic-- all those kinds of things, not eating a lot of meat. So that's really a part of the lifestyle." NL8*

In sum, environmentalism guided farming practices for many participants. While the extent varied, there was widespread recognition that this ecologically motivated approach was often something that set them apart from the rest of the agriculture sector. More importantly, environmental concerns were often perceived as complimentary to, rather than in conflict with, business. In describing farmers who influenced her, one Dutch farmer said:

> *"We are so much on the pathway in the Netherlands, but also in the rest of the world, towards specialization, more input, and you know actually drifting away from what is sensible more and more and more. And these people [influential permaculture farmers] show that if you actually have the guts to do it differently and to say to everybody this is how it should be-- I'm going to do it no matter what you say. And they actually show that you have higher biodiversity, and more harvest, and thus a better income."* NL4

International Differences

Overall, farmers in the U.S. and the Netherlands shared similar aspects of an environmental ethic. However, one key difference between countries was the enthusiasm for farms structured around agroforestry and permaculture in the Netherlands. About half of interview participants in the Netherlands expressed an intent to design their farm using permaculture techniques, such as internal nutrient cycling, perennial cropping systems and forgotten plant varieties. By contrast, only one participant in the U.S. explicitly discussed permaculture or agroforestry as an intended practice. Also, the biodynamic system only arose in conversation in Dutch interviews, which perhaps reflected both the stronger European biodynamic movement and the training programs available to beginning farmers. Many of the Dutch interview participants were trained at the Warmonderhof, a biodynamic agricultural school in the Netherlands. According to Ruud Hendriks, a Warmonderhof teacher, the program is the only practical training program for organic agriculture in the Netherlands, and that almost all of the students in their two-year program are first generation farmers (R. Hendriks, personal communication, January 11, 2018). In general, farmers appreciated the biodynamic approach to farming, and for many, it enabled moving beyond organic. For some, the spiritual aspect of biodynamics was central, while others left it behind at the end of their training programs.

Despite the difference between the U.S. and the Netherlands in regards to adopting the permaculture or biodynamic labels, farmers in both countries frequently displayed an interest in systems thinking. They discussed the benefits of letting nature do the work, and creating an ecosystem that is self-sufficient with a reduced need for outside inputs including labor: principles at the heart of permaculture and biodynamics. These conversations included observations about animal-plant linkages, diversity to combat disease, ecological cycling and various bio-interactions. Often, these choices were related to environmental ethics as well as cost reduction.

In both countries, I made an effort to select interview participants who represented a range of farm types. I attempted to select farmers that might be more conventionally oriented by choosing respondents who had indicated "none of the above" in response to the survey question asking them which practices apply to their farm and listing various organic or biodynamic options (Appendix 2, page 108, Q14). The two farmers selected for interviews who had checked this category in the Netherlands, both turned out to be farmers who were actually anything but conventional: they were both designing their farms around permaculture principles. Perhaps because of my own U.S.-centric perspective I did not think to include permaculture as an option on this question because I was not aware it would be such a popular perspective. This selection bias was a limitation of this research.

Community

Although less prevalent than an environmental ethic, community building through forming relationships, supporting the local economy, and education appeared as another salient value. The explicit idea of intentionally building community through the practice of farming occurred in just under half of all interviews, with about six U.S. farmers and eight Dutch farmers emphasizing their mission to or enjoyment of creating community. This community took many forms, and included customers, neighbors, volunteers, interns, employees, and other farm visitors. For some farmers, this idea of building community was central to the goals and mission of their farm, while for others it was more of an enjoyable side-effect.

Selected quotes, community:

> *"I do think it's all about relationship building, and if it's not, we already have mega industrial farms with huge monocrops. So what's the point? If it's really just about producing food and not about relationship building, they've kind of got that covered. So why bother doing this? To me, it's got to be about relationships and ecology." MD7*

> *"I think my hope is that people will view the production of basic stuff like food as a more shared responsibility than just a corporation or a business that is just maximizing profit..." NL10*

> *"And another thing that we use in the garden that I would never like to stop is the fact that we have a community. So we open up and there are people with, for example, autism, and people who are refugees, and they have traumas, and their families are still in, for example, Eritrea, and they can work on the farm, and they can learn Dutch, but they were farmers in their*

country, so now they have at least something here to do. They have each other. They meet up." NL3

Community creation is a gradual process, and was often acknowledged as needing years to build. Some farmers who began farming with, at least, the partial mission of creating community, also discussed challenges in realizing their vision, and encouraging customers or employees to move beyond a transactional relationship. In addition to these explicit references to community building, participants revealed their community ethics through a desire to educate others and support the local economy.

Educating Others

Education and knowledge sharing reoccurred frequently as an important value to many farmers. In fact, several participants actually came to farming from careers in education. Education was both deliberate and indirect, including training future farmers, hosting school groups, sharing knowledge with other farmers, and educating consumers. Indirectly, many farmers found their practices steeped in education through their consumer relationships and position in the farming community.

Consumer education appeared as an inseparably component of direct to consumer sales, and was discussed both as a source of frustration and a rewarding aspect of the profession. While consumer misperceptions about price and quality could be demoralizing, some farmers viewed this educational exchange as an important contribution to the food system, just as others expressed a desire to move away from direct to consumer sales to avoid it. Leading by example was another form of indirect education, but geared towards other farmers rather than consumers. Several participants expressed the goal of building a farm that could serve as an example. As one Dutch farmer said:

"I want to inspire people. And to show them, maybe those people who want to start farming, that it's possible. I'm getting my income from a one hectare organic garden. I think that's quite special in the Netherlands." NL3

Some participants even described their farming activities as a proof of concept to demonstrate that their particular style of agriculture could work, whether it be permaculture or microfarming.

Surprisingly, a number of interview participants were involved in a form of direct education: training other future farmers by hosting interns and trainees. In both the Netherlands and the U.S. hosting trainees was not only a source of affordable labor, but could also be a side income stream, as various support programs exist to compensate farmers for the education they provide. For an urban grower in Maryland, this act of training new farmers was not just an important role of her farm, but of urban agriculture in general, and she observed that she has seen a

number of urban farmers eventually move from the city to the country to begin farming:

> *"I think a real role of urban farming is to recruit and train young farmers be it urban or rural….Young people congregate in cities, we need more farmers. Everyone agrees we need young farmers…And what better place than to recruit them in the city if you are trying to get people who don't come from farming backgrounds." MD7.*

The rewards of educating others were shared by both organic and conventional farmers, with one conventional dairy farmer revealing that she never turns down a farm tour and the opportunity to share her farming experience.

Feeding People/Local Economy

As most participants engaged in direct sales, it is perhaps not surprising that about half of all interview participants discussed their contribution to the local economy and food system. Farmers valued their role in the local economy, but their vision for the ultimate role of localized supply chains in the broader food system varied. For some, food sovereignty through a more localized food system was an essential aspect of feeding the world. They saw their farm as part of a shift to build self-reliance by localizing the food system. By contrast, others did not aim to replace large-scale farms and global markets. Instead, these farmers hoped to bolster the local economy. Moreover, the local orientation of their farm businesses was not always discussed as a choice based on values, but also as a business decision resulting from the trendiness of local products, and the relative accessibility of local markets. It should be noted that many interview respondents produced products that were not, in fact food, such as flowers or wool, thus while some farmers found the responsibility of feeding people rewarding, it is not exactly surprising that those producing non-food products did not mention the same rewards.

<u>Selected quotations, local economy</u>

> *"I don't have a feed the world concept. I don't think that's ever been the intention of my farm. There's a lot of farms out there, land is way cheaper in other parts of the country. So we've never really had that mentality, so I guess that we would fit in the smaller, niche, diversified, market side of agriculture." MD10*

> *"I really believe in the local food movement, and I believe in the economic health and just the physical health of the community has a lot to do with the food and if people know me and support me as a farmer, and I provide this food and there's an exchange, and then I turn around and maybe spend that money back in the community." MD11*

> *"Local food supply, I think that's very important. And fossil oil—peak oil strikes and there's no, we are not allowed anymore to drive kilometers to do our shopping and things like that, I will help people survive. That's the role. Short chains are less prone to fraud and other awful things. People know each other." NL11*

"I wouldn't say that I want to get rid of all large scale agricultural—these farmers in the polders that grow acres and acres of potatoes because what they do is valuable as well, they provide some sort of stability. And to some degree, I think, because of their scale, the larger scale on which they operate, they can more easily promise large amounts of food…" NL10

"Because our philosophy is that each village should have it's own garden and it's own cooperative, so that you can return to having your own crops and your own food." NL14

Synthesis: The Good Farmer Construct

The values expressed above--the farming lifestyle, environmentalism, and community--all factor into farmers' conception of a good farmer, and combined endow their work with meaning. Concepts relating to land stewardship via soil preservation, protecting the environment and creating an agricultural ecosystem were the most dominant with the most associated codes. Community-centric values were present to a lesser extent, and farmers demonstrated a greater range of opinions regarding to what degree they desired to be engaged with these activities, and their role in the food system. Interestingly, in survey responses the importance of maintaining a high level of customer interaction and having a positive community impact were ranked as two of the most important activities. While initially this may seem to contrast with interviews in which some farmers expressed a desire to move away from time-consuming customer interactions, short supply chains were as much a marketing choice as a value-based decision. Most farmers recognized a small niche for themselves within the local economy, but only a few spoke of this as truly central to their values. Most often a good farmer was depicted as someone who can balance their land ethic with business needs, indicating that these are two of farmers' most salient aspects of good farming identity. This business ethic, and the balance with farmer's search for meaningful work, will be described in detail in the next chapter.

Chapter 5: The Business of Meaningful Work

THE BUSINESS OF FARMING

Regardless of scale, farm type or background, almost all interview participants placed a strong emphasis on the business aspects of farming. Farming as a business arose in conversation in a variety of contexts, such as discussing the challenges they faced in earning a sufficient income, weighing the returns of different products, or discussing the process of learning how to run a business. The most frequent way in which business arose in conversation was in farmers discussing the importance managing an economically viable business to farming. This skill was mentioned explicitly by most participants as central to the concept of a good farmer. Moreover, farmers frequently discussed their admiration for other farmers on the grounds of their business success, or expressed a desire to strengthen their own business abilities.

Selected Quotations, Business and the Good Farmer Construct:

> "*I also think being a good farmer means being good at business*." MD1
>
> *"I guess I respect people who can make a go of it, not just are good growers, but are good business people too."* MD3
>
> "*I think what actually makes a good farmer these days is a good business person, and that's sad*." MD6
>
> "*You have to make money, because otherwise you can't exist, so I think that's successful for me. If you are able to manage the whole farm in this society that we are in and still have your ideals*." NL13
>
> *"The love for the land cannot be so big that it overshadows the economic aspect of things."* –NL7
>
> *"A good farmer is that he makes money, of course, because otherwise you can't exist. On a fair way for people and environment."* – NL5

While most farmers appreciated the importance of business, the level of enjoyment in business was heterogeneous. For some farmers, a love for business was the gateway into farming, and the elements of farming that involve running a business are some of their favorite aspects of their profession. Others reveal a desire to focus more time on other aspects of farming. For these farmers, running a viable business allows for focus on the other things they value, from spending time with the chickens, to having a positive impact on society. Moreover, farmers often expressed an acknowledgement of the difficulty of farming as a business, both for themselves as new farmers, but also for traditional and established farmers.

Selected Quotations, Enjoyment of Business:

> "*The numbers...I really love tracking my data and looking at my sales and setting goals and making budgets*." MD7

> "*I wrote up a business plan, and I really liked it. I loved the process of writing the plan. And I loved being in that creative place. So, that's when I was like, I think this [farming] is what I want to do."* MD1
>
> "*We didn't come into farming to make money, we came into farming for all of these other reasons, so we often make the wrong choices because we're following what our heart says*." MD5
>
> "*I actually feel like that's [business] like the least interest I have in my farm, but I feel like if I have to be successful, that's what it's going to take."* MD6

While the love for the business of farming varied among participants, most farmers seem to view agriculture through the lens of business, and frequently discussed choices they had made as a result of a business decision, such as becoming certified organic, starting a winter CSA to improve year round cash flow, growing a particular crop, or selling direct to consumer. As one organic farmer put it:

> "*If you believe in like three-quarters of organic practices, you might as well do the last quarter and get certified and have your product be worth a whole lot more money." MD2*

Farming styles research has shown that farmers have a multitude of business strategies and approaches that differ in their growth orientation, financial conservatism and openness to diversification (De Lauwere, 2005). While it likely goes without saying, the farmers interviewed did not enter agriculture with the intent of becoming rich. Despite the viewpoint of farming as a business, many acknowledge and accept the financial hardships and the difficulty of making an income. At the same time, they show a strong desire to earn a comfortable income in order to support themselves or their families. Their business model is not one of constant growth, but rather a hope for a stable equilibrium and a better future for their families. Many farmers see their ability to eventually achieve this goal as intrinsically tied to the future of their farm.

Interestingly, despite previous studies that emphasize the importance of yields in perceptions of a good farmer, high yields were never cited as an element of a good farmer, unless prompted, in which case participants generally agreed that higher production was a good thing, provided it was balanced with other concerns. Instead, participants focused on the ability to manage a profitable business and returns on investment, rather than quantity of production.

In this way, business is the context that provides a structured morality in which farmers can weigh their decisions and sort out conflicts or tensions. Decisions are the result of a constant negotiation between values, the ethics that give their work meaning, and the general goal of paying the bills. Whether willingly or reluctantly, all farmers view their practices and decisions through the filter of business when they begin farming. However, for most business does not seem to be viewed as a necessary evil, but rather an essential aspect of the farming lifestyle, with many taking pleasure in the diversity of tasks, problem solving, and creativity intrinsic to business ownership.

WHERE VALUES MEET BUSINESS

Farmers' decisions result from a constant negotiation between their business ethic and the other values that motivate their work. This struggle is most evident in the areas where their current practices do not align with their ideals. The data collected from Section 3 of the survey is helpful in illustrating the outcome of this negotiation.

The survey presented a series of 11 questions in which respondents were asked to position their current and ideal practices on a sliding scale between zero and 100 between a productionist ideal (value of zero) and an agroecological ideal (value of 100). Figure 6 shows the questions, mean slider position and data distribution for respondents. Mean ideal positions were almost always positioned towards the agroecological end of the spectrum (mean > 50), with the exception of production-orientation (mean = 31). While these overall trends are similar in both the U.S. and the Netherlands, on average respondents in the Netherlands were positioned further towards the agroecological side than U.S. respondents. Mann Whitney U tests, for not parametric, independent data, were used to assess the differences between mean current positions in the U.S. and the Netherlands. Table 3 indicates in which instances the two countries differed significantly. However, it's important to note that these differences reflect only the study sample, and may likely be a result of sampling bias, as a greater proportion of respondents in the Netherlands were using practices that at minimum might be considered organic.

Each scale is relative and based on the farmer's individual perception. It is therefore important when interpreting these responses to look at the difference between the ideal and current position for each farmer. A positive difference indicates a desire to shift towards the agroecological end of the spectrum, while a negative difference signifies an aim to become more productionist (Table 4). Wilcoxon's Signed Rank Tests, for paired, nonparametric data, were used to determine in which instances ideal and current positions differed significantly for U.S. and Dutch respondents (Table 4).

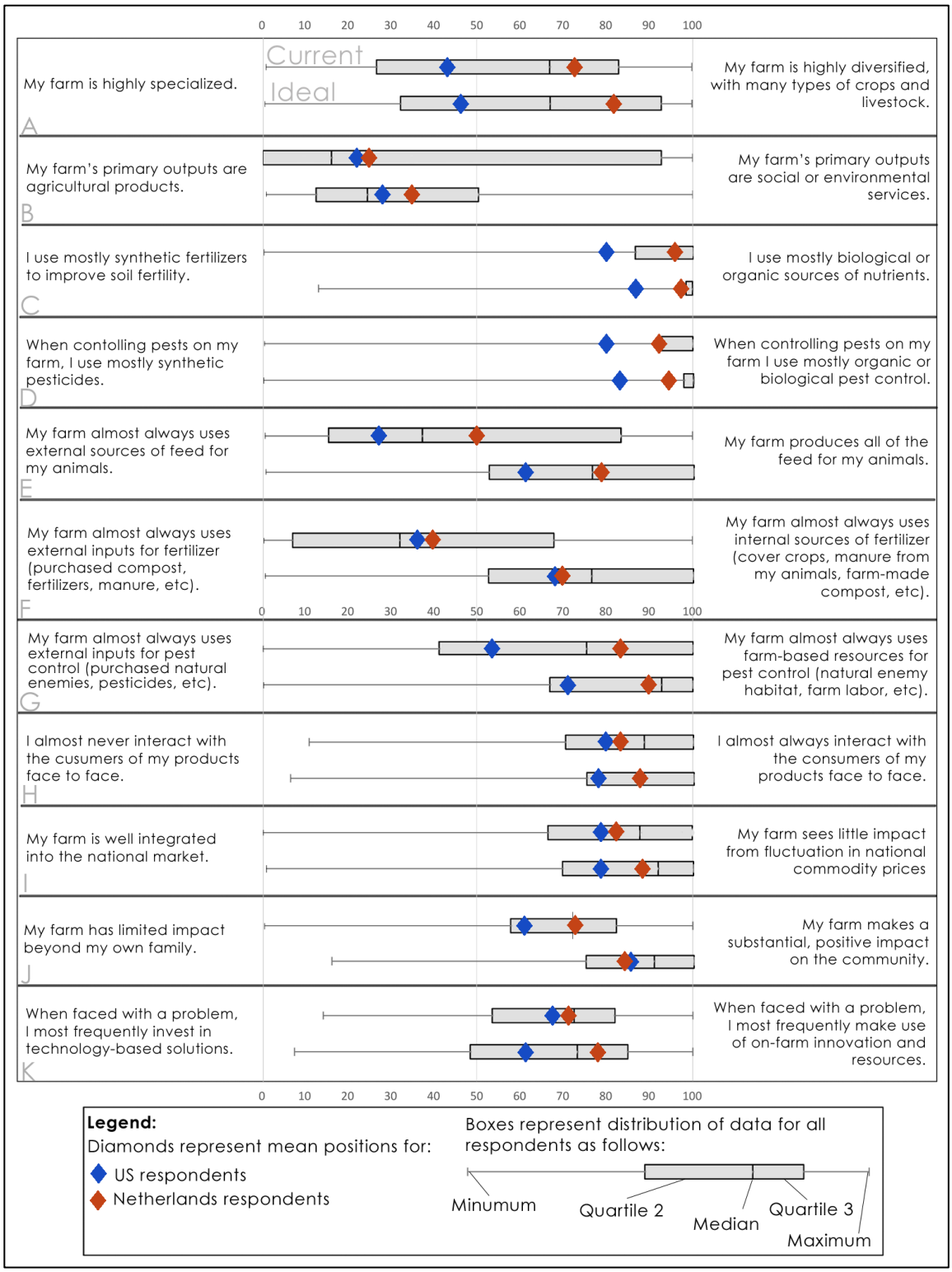


Figure 6: Mean slider positions for survey respondents. The top line in each category represents the position of current activities; the bottom line represents the position of ideal activities. Boxes show data distribution for all respondents. Values of 0 represent complete agreement with the statement on the left (productionist ideal), while values of 100 represent complete agreement with the statement on the right (agroecological ideal).

Table 4: Mean slider positions for survey respondents. The table shows the mean current and ideal slider values for all survey respondents, and respondents by country. The higher the value the more respondents lean towards the agroecological paradigm and away from the productionist paradigm. The highest possible value is 100, and the lowest 0. The Diff column signifies the difference between ideal positions minus the current position. The full text of each question can be matched with the letters in Figure 6.

	Mean Position								
	All Data			US Data			NL Data		
Activity	**Current**	**Ideal**	**Diff**	**Current**	**Ideal**	**Diff**	**Current**	**Ideal**	**Diff**
A. Level of Diversification	57	61	5	44	46	2	74**	82	8*
B. Output Orientation	23	31	8	22	28	7*	25	35	9*
C. Fertilizers Type	87	92	4	80	87	7*	96**	97	0
D. Pest Control Type	85	89	3	80	84	4*	92**	95	3
E. Source of Feed	38	70	33	27	61	35*	50**	79	29*
F. Source of Fertility	38	69	31	36	68	32*	40	70	30*
G. Source of Pest Control	66	79	10	53	71	14*	84**	90	6
H. Level of Consumer Interaction	81	82	1	80	78	-2	84	88	5
I. Insulation from National Market	79	83	3	78	78	1	82	88	6*
J. Impact on Community	67	85	18	61	86	23*	73	85	11*
K. Technology Relations	69	68	-1	67	61	-6	71	77	6*

*Notates that the difference between the current and ideal positions in each country was statistically significant ($p<0.05$). In most cases the Wilcoxon's Signed Rank Test was used to determine statistical significance, because the data not normally distributed. Feed source was the sole expection in which the data was parametric, and thus a paired t-test was used instead.

**Notates that the current positions in the Netherlands were significantly higher than the current positions in the US ($p<0.05$). In most cases, the Mann Whitney U Test was used to determine significance, because the data was not normally distributed. Feed source is the sole expection in which the data was parametric, and thus an independent sample t-test was used instead

The current practices of respondents show a greater range between productionism and agroecology than ideal practices, with the type of inputs used (organic source of fertilizer and pest control), and direct customer interaction being the most agroecological practices. Mean ideal positions were generally closer to the agroecological ideal than mean current positions. The largest differences between current and ideal positions for respondents of both countries were in feed source, fertilizer source, and community impact, indicating that respondents may struggle to reduce outside inputs to a level in line with ideals, and that they want to have a greater impact on their community.

Moreover, there was substantial heterogeneity among individual responses that is obscured by the means. In some cases, respondents were fairly unified in aiming for an agroecological ideal, such as using biological sources of fertility and pest control. In other cases, some farms hoped to become more agroecological while others aimed to use practices that are more productionist. This can be seen particularly in regards to farm diversification, where a cohort of relatively diverse farms (current practices ranked over 50), actually hope to become more specialized. A similar trend can also be seen in regards to farmer's interaction with technology and customers (Figure 7).

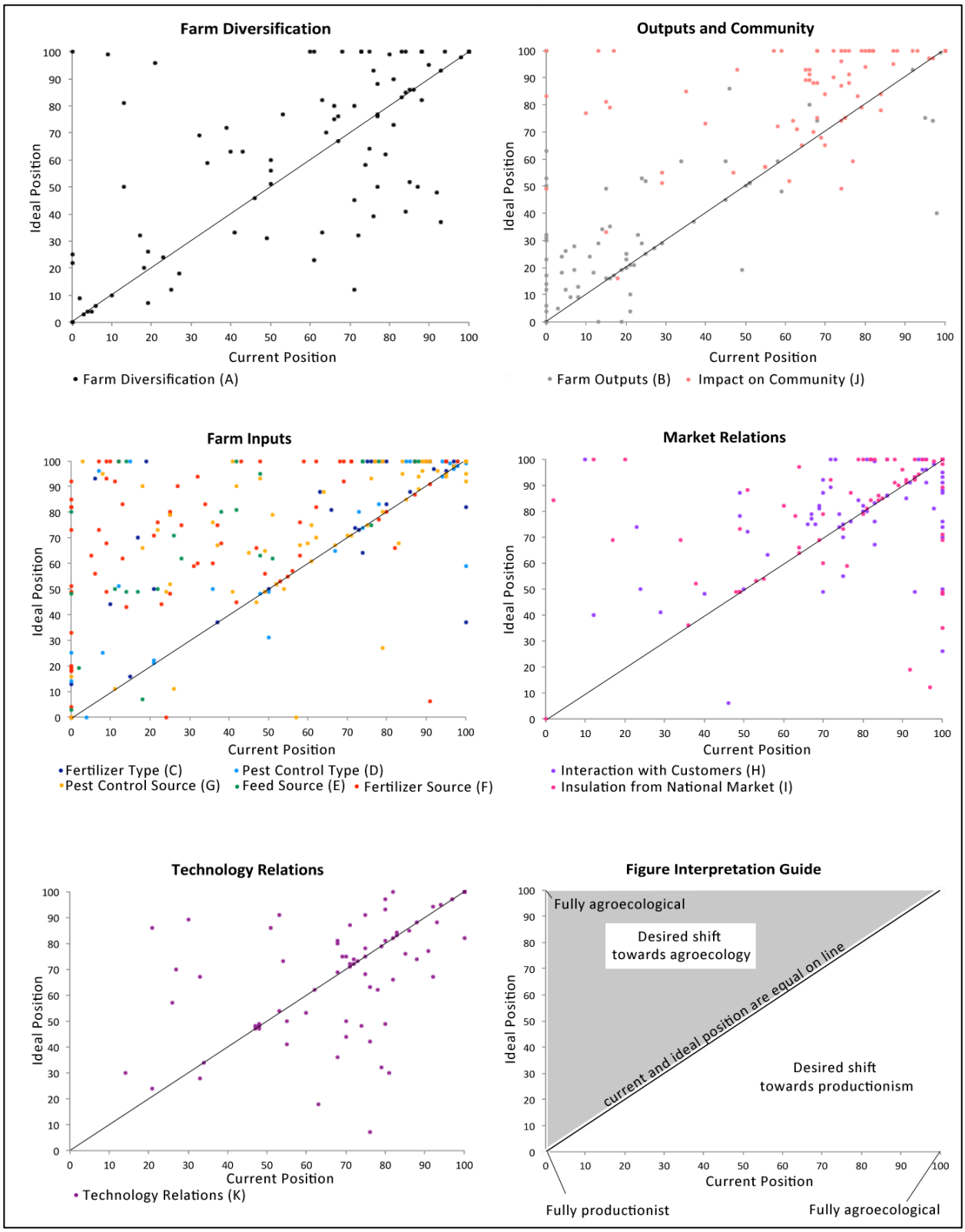


Figure 7: Scatter plots representing the responses to each of the survey slider questions. The x-axis represents the current position, and the y-axis represents the ideal position for each question. All points falling on the diagonal line represent respondents who reported equal current and ideal positions. Points above the line represent respondents who want to shift their practices towards agroecology, while points below the line represent those who wish to shift towards productionism. The full text of each question can be matched with the letters in Figure 6.

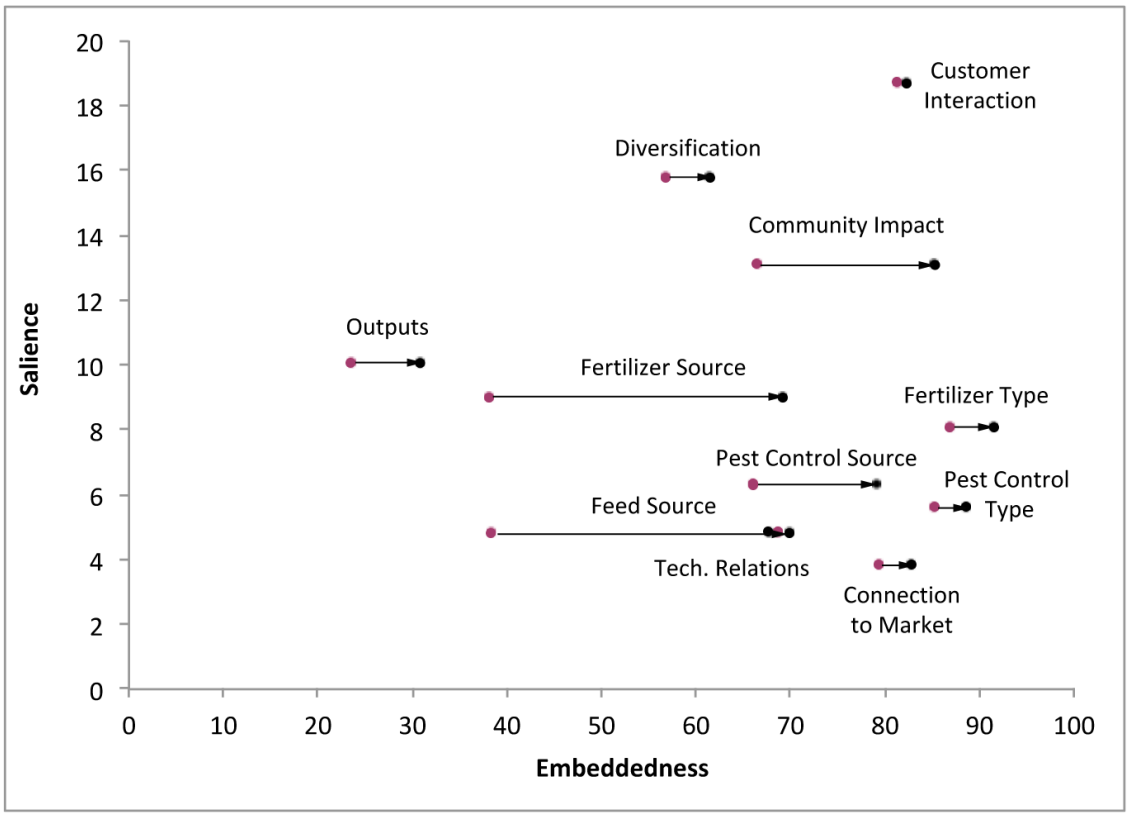


Figure 8: Mean embeddedness (slider position) relative to mean salience for each category of practices or relations. Values of zero along the x-axis represent fully productionist positions, while values of 100 represent fully agroecological positions. Each respondent was asked to distribute 100 points among all 11 categories based on the importance of each category. This scoring system became the salience value (y axis). The red dots represent the mean current slider position, and the black dots represent the mean ideal slider position for all respondents. The black lines show the size and direction of the shift between current and ideal activities.

In interviews with farmers some of the reasons for this became clear. One very diverse farmer described her desire to become more specialized as a business decision because she felt overextended growing 60 different crops. Many farmers also commonly expressed enthusiasm for technology (more on this in the Chapter 5), and hope to increasingly mechanize with more financial resources. Others, by contrast, wanted to remain focused on manual labor. These different approaches to technology were often based on varying value systems.

Following the slider questions, respondents were asked to distribute 100 points across the 11 topics to indicate their relative importance. On average, farmers signified that customer interaction, farm diversity and impact on community were the most salient activities. Figures 8 displays a scatter plot of the mean level of embeddedness (position on the spectrum between productionism and agroecology), and salience (level of importance) of each topic. Ideal positions clearly show respondents to cluster towards agroecology, with the exception of a focus on agricultural outputs. Interestingly, while few farmers brought up yields in the interviews, these survey results demonstrate that most farmers view the

contribution they make through agricultural production as more important than environmental or social services. This focus on production is a relatively salient value ranking higher than many other practices, including the use of internal fertilizer and pest control. There is a tension here not only between the strong environmental and community ethic that appeared in interviews, but also the high salience of having a community impact. Ultimately, despite a strong community ethic, when forced to choose, farms are still seen as places of production, rather than consumptive spaces. It is also surprising that direct consumer interaction had the highest mean salience, given that community building was a prominent value for only a portion of interview participants. However, this may have resulted from business practicalities in as well as values; the interviews revealed that direct marketing was a strategy often selected as much for higher price premiums and market access than it was for social value. The relatively low salience of type of pest control is also surprising given interview data that reveals a strong preference for biological, and non- chemical inputs among most participants. In fact, many participants indicated that they would have no interest in farming another way.

It is important to note that due to their quantitative nature, the survey questions needed to be simplified and forced respondents to make tough decisions with little information. Interpretation of these questions likely varied by respondent. It is possible that these items received low salience ratings on the survey because respondents didn't want to change their positioning. While the survey instructions asked farmers to rate importance based on "changing or maintaining" their positions, when forced to choose, a higher number of points may have been allotted to positions that currently didn't align with ideals. The complexity of this survey instrument and the potential confusion it can cause is a limitation, and a justification for the more nuanced data provided by the interviews. For this reason, it is also important to look at the values that appeared in interviews.

SYNTHESIS

The farmers in this study are far from homogenous, but on balance they take a fundamentally different approach than the productionist ethos. Their focus on direct sales, community, ecologically oriented methods and systems thinking lean heavily towards the agroecological paradigm. Yet, aspects of productionism still carry through in their work, such as the use of external inputs, an emphasis on agricultural output and entrepreneurialism.

The farmers that participated in this research balance both idealism and pragmatism. Their ideals are embodied in a strong land ethic, a drive for meaningful, challenging work, and an interest in community. But first and foremost, farmers are entrepreneurs, making choices that can allow them to find meaning and rewards in their work while supporting their family and enjoying the benefits of business ownership. While many express an interest in farming long-term, they demonstrate not only a willingness to walk away, but a desire to, if they cannot make it financially viable. Participants share a general acknowledgement that no one comes to farming to get rich, but that in order for it to be viable both on the level of a social movement

and a personal career, farming needs to provide adequate financial returns. These two poles, values and business, create a structured morality that informs decisions.

Tensions between values and business most often arise in the realm of the practical challenges farmers face every day. These on the ground realities, coupled with farmers' values encourages them to structure their businesses in a way that creates meaningful problems to solve. The next chapter provides an in-depth look at the challenges and solutions of first generation farmers, and how they navigate this complex negotiation between ideals and practicalities.

Chapter 6: Challenges and Solutions

Introduction

This chapter reviews the key challenges and their solutions that appeared throughout interviews. Where applicable, I reference data from the survey to create a more robust picture.

The Challenges

Interview participants referred to a number of challenges, including financial constraints, land access, acquiring knowledge, dealing with regulations, and adapting to climate change. These challenges are echoed in the literature on beginning farmers, which attributes access to land, capital, credit, and markets among key barriers (Augere-Granier, 2015; Monller & Fuller, 2016; Taylor & Koo, 2013).

Money

Financial challenges were the most commonly discussed barrier for first generation, beginning farmers, and generally fell into two categories: accessing sufficient capital to build and grow the business, and turning a sufficient profit. Many of the interview participants were within the first five years of their business, and while some had recouped their investments, they often had yet to generate profit or compensate themselves for their time. Participants discussed relying on off-farm jobs or a partner's income. Even among farmers who had been operating for longer than five years, money remained a challenge.

Selected Quotes, financial challenges:

> *"Money. That's 100%, by far the hardest part…the cash flow, and in the winter…that's why this job [referencing second job] it changed my life. Before this, we couldn't use our heat because we couldn't afford it in the winter and we were freezing. I mean, it was stupid! We were like, why are we doing this?" MD1*

> *"Another challenge is to earn money with it. So economically, it's not really a sustainable system, because it's very difficult to earn enough money with this kind of farm." NL12*

> *"Working hard and earning no money is fun for maybe 2 or 3 years, but then you really want to earn some money at the end of the day." NL6*

Financial challenges crossed borders and farm types and were equally common in both the U.S. and the Netherlands and among organic and conventional growers. However, they were most acute among younger farmers in the early stages of their business. Several interview respondents were second career farmers and could tap into financial resources accumulated in past professions. While second career farmers also discussed the importance and challenge of creating a profitable farm business, finding funds for initial investment and land purchase seemed less challenging.

The lack of financial resources led to other challenges, constraining participants' ability to invest in equipment, infrastructure, labor, and land. Because many farmers are operating on leased land, some are hesitant or restricted from making site-specific investments. Participants also felt limited financially when it came to meeting the costs imposed by regulations, particularly those involved with raising dairy animals or organic certification. Some farmers described financial restrictions as dictating their scale, their market, or their decision to engage with certification schemes. In fact, many first generation farmers seem to have been attracted specifically to low-investment farming models such as microfarming and market gardening. Four interview participants cited low-investment farming models as enticing not only due to financial impediments, but also lifestyle preferences. These low investment models also included innovative business structures, such as one in which the farmer was actually hired by a cooperative of consumers, and another in which a beginning farmer partnered with a more experienced farmer. Having the ability to leave with less risk was an attractive incentive for these participants to start farming. Yet even these low capital models still require investments that can be a stretch for many farmers.

In the literature, access to credit is a frequently referenced challenge for farmers. Traditional forms of credit such as loans were only discussed in seven of the 33 interviews. Several of these seven participants had successfully secured loans, but others expressed an uncertainty in knowing how to approach financial institutions and where to go for information. Thus, many participants also discussed non-traditional forms of funding, including grants from government or municipal support programs, crowd-funding, family support, and, most frequently, income from second jobs and partners. Notably, the USDA grant program to cover the costs of high tunnel construction was a popular and frequently utilized program among participants in the U.S.

Finally, it is worth noting that not all participants felt discouraged about their farm's financial prospects. Some, often those who had been in the business for over five years, felt their farm had a promising financial future. For example, one Maryland grower proudly disclosed that she earns about $20/hour from her farm. Ultimately, participants did not enter farming for wealth, but recognize the need for sustainable income.

> *I don't want to make huge amounts of money, I don't think any of us should go in with that idea, but I just want to support the community, I want to support my family, my friends, my neighbors and the community…If I could do that in a sustainable, caring way that makes sense to the bigger ecosystem then that would also be wonderful. I would like to expand more and make a comfortable, you know, above poverty line wage. MD17*

Access to Labor

The financial hardship faced by most farmers exacerbates another key challenge: access to labor. Finding skilled and reliable help and budgeting enough to pay them

was a hurdle faced by many participants in both countries. Financial resources often constrain the amount that farmers can afford to pay labor, which in turn leads to a reliance on less-skilled or unreliable helpers. While the farmers in this research expressed a desire to pay people a living wage, many were faced with the reality that they themselves were not earning a sufficient income. For some, this challenge led them to scale their farms to a size that requires little outside labor. For others, creative arrangements to find help, such as tapping into the worldwide volunteer program, WWOOF offered potential solutions.

Concerns about labor were often emotional issues that can cause a substantial amount of stress. One U.S. farmer related labor to the immigration debate, an issue, she says, she felt particularly close to because her husband is Mexican. She voiced her frustration with anti-immigration policies and perspectives that don't often account for the role immigrant labor plays in the food system. Another farmer told me an emotional story of needing to fire a close friend, after a decision to pay her more than they could afford nearly sunk the business. A third farmer exasperatedly described a complex milking schedule with a team of high school students who often canceled last minute due to competing priorities, leaving the extra burden with the already stressed farmers.

Selected quotes, labor and help

> *"Our biggest horrible almost fatal choice was how much we paid our labor. So we hired one other person, we paid her way too much..."MD5*
>
> *"How do we scale up and also have skilled labor? …When I was growing up it was get off the farm, and don't even come back to [county name] if you don't want to. Go to college, get a business degree, that kind of thing. So finding skilled labor is a huge challenge for us." MD10*
>
> *"Getting staff that I can train and then trust to do it well has been a challenge. That will really take pride, because so much of the time, I can't be everywhere." MD11*

Land Access

Given the financial constraints faced by first generation farmers, and the considerable cost of farmland in each study site, it is perhaps no surprise that access to land was a challenge that arose frequently in conversation. Regardless, about 44% of all survey respondents owned some of their land, with about 60% leasing at least some of their land, however, these proportions were considerably different between the U.S. and the Netherlands. In the U.S., over half of survey respondents (58%) owned their land, whereas in the Netherlands, only 24% of respondents owned some of their land. This is unsurprising given the far higher cost of agricultural land in the Netherlands than in Maryland. Generally, older farmers were more likely to own their land than younger farmers, with 54% of survey respondents over 40 owning some land, compared to only 38% of respondents 40 or under. This may be because these farmers had acquired more resources over a longer previous career to enable the purchase of land.

These financial and land access constraints raise the question of whether beginning farmers run small farms as a matter of preference or necessity. These data provide no simple answer, but due to these constraints, these small-scale farms are often the only entry point for starting farmers. Some interview respondents mentioned that if they could have acquired more land, they would not have started so small. However, even among these respondents, discussions of scaling up are always modest, with most wanting to remain in the small to mid-scale range, only scaling up by a couple of hectares. Moreover, small-scale agriculture was often the basis of training programs for new farmers and the type of agriculture that initially inspired them to start farming. Interview participants saw a number of barriers to scaling up. Land access certainly was a defining feature of scale, but other impediments to scale increases included labor, equipment, investment costs, attentive animal management, and the enjoyment of the work.

When the issue of scale came up in conversations, it was most often discussed as a defining and dividing feature of farms. Farmers in both countries often cited scale as a differentiating feature between themselves and other farmers, most commonly viewing their small scale as existing in a "different world" than the large scale of other farmers. Some farmers express admiration or respect for these large scale growers, while others tend to view them less favorably, but most often scale differences are observed without judgment. Several farmers (about eight) also mentioned that they have had trouble being taken seriously, by other farmers, banks, or regulators because of their scale.

Knowledge

Although far less prevalent than financial limitations, lack of knowledge was discussed in over half of all interviews. The learning curve is steep for first generation farmers, some of whom started their farms with less than a year of practical experience. While this learning process was also a source of enjoyment and motivation, finding the best source for knowledge and taking the time for training proved challenging. Some farmers felt that this challenge was particularly acute due to the pioneering nature of the type of farming they were practicing, whether small-scale market gardening or permaculture. In some cases, the pace of the season progresses so quickly that farmers must think on their feet. As one farmer who purchased an existing fruit orchard told me:

> "*We were in it about six weeks and an eighty year old woman walked in here to buy peaches, and I was helping her, and she looked at me and said, you don't know what you're talking about. And I didn't.*" MD14.

Although lack of knowledge appeared as a challenge for both organic and conventional farmers, some ecologically oriented farmers found a silver lining to their ignorance. As one Dutch farmer starting a food forest said,

> *"I don't have a background in farming, and I have to learn everything from scratch, not really, but…I have people around me for questions but I don't have a family where I can go for farming. That's in one way a defect, but in*

the other way, a benefit, because I don't have the knowledge about conventional farming." NL5

In this way, lack of knowledge was both a challenge, but also a situation that enabled a fresh perspective on agriculture.

Regulations

About 11 of the farmers interviewed (33%) discussed some level of challenge they faced with agricultural regulation. These challenges were perceived both by farmers in the U.S. and in the Netherlands, and were particularly acute for farmers raising livestock or making a value added product. Issues included frustration with stringent (and sometimes perceived as nonsensical) organic regulations, zoning restrictions on property use, navigating government bureaucracy, animal controls, and troublesome dairy inspectors. Regulatory challenges affected both organic and conventional farmers, and farmers of all age groups and levels of resources. As one farmer revealed:

"You've got to understand. I work in the space program. For the government. I think there's more rules to be a farmer." MD6.

For some, navigating these barriers was a matter of persistently working with regulators. One U.S. farmer described the process in which he successfully lobbied to change a state law in order to permit farm-based breweries. A Dutch farmer described her process of continual contact with the municipality over the years to gain their approval, and eventual support for her farm project. However, it's important to note that this persistent and proactive approach to regulations requires a particular personality and skillset. A pair of U.S. farmers, in describing their multi-year interaction with county officials to gain approval for the infrastructure they wanted to build on their farm, attributed their success to prior experience working in law.

"We're highly educated. That really was a bit of a surprise to see that moving through the regulatory process is not user friendly…. We can read regulations and documents and easements, and you know what your rights are and what processes you need to follow, and it was difficult for us, so it can be really challenging for others, and that's why I think a lot of them don't engage the regulatory process." MD3

Indeed several farmers spoke of circumventing potential regulatory snags by remaining small scale and trying to work under the radar. In the Netherlands, this often meant limiting the amount of animals kept on site in order to not fall under the definition of a commercial livestock farmer. One such farmer described in detail her perception that regulations posed a barrier to their ability to scale-up or raise animals in pasture-based, diverse systems, while at the same time increasing regulatory requirements were forcing small farmers out of business. For her, she sees clear hypocrisy in increasing policy rhetoric about bringing farmers and

consumers closer together and improving the sustainability of agriculture, while creating policies that lead to increased specialization of agriculture.

Unpredictable Weather, Climate Change and Soils

About as equally common as the regulatory challenges were discussions of unpredictable weather patterns, inherent soil fertility challenges and climate change. Due to land access limitations, some farmers were working on land of marginal value, or land that had previously been cropped continuously and poorly cared for. Improving soil fertility proved to be a learning process. Unpredictable weather patterns were another problem cited by about half of all farmers interviewed. Participants discussed the discouragement of a season's hard work being undermined by a single event: a storm, a predator that kills the chickens or a late spring freeze. This was an issue that equally impacted farmers of all ages and types, and many of the farmers I spoke with credited climate change with exacerbating the scope of the problem. This is a challenge over which farmers have little recourse or control, and for many the solution was found in building resilience.

THE SOLUTIONS

Despite these challenges, first generation farmers have devised a wide range of innovative solutions. These solutions range from the basic design of their business models to specific tools that can reduce labor. In these next sections I will review some of the primary categories of solutions that emerged from the interviews, in particular the structure of farm business models to be multifunctional, artisanal and direct to consumer, the development of strong networks and partnerships, and the use of technology, specifically the internet, in accessing and disseminating information.

Business Models

Perhaps the most apparent survival strategy of first generation farmers was the way in which they structured their businesses. Most farmers are operating, small-scale diversified farming businesses with multiple sources of income and direct to consumer sales. These models require relatively low investment and small land areas. While market access can be competitive, direct to consumer sales often holds less regulation and provides an easier entry point. Diversification was also a key strategy, not only in growing a wide variety of crops or livestock, but also in creating multifunctional farm-based income sources.

Multifunctional Businesses and Other Income

Income from sources beyond the sale of agricultural products was of pivotal importance to the majority of survey respondents, as mentioned in the At a Glance section of Chapter 4. Non-farm household income was the most important additional income stream. In interviews, participants frequently credited income from partners with enabling their farming dreams. This was even true in households in which both partners had an interest in farming. As one farmer succinctly described her and her husband's plan to own a farm:

> "*We would lease [land] until we could buy—and whoever can get the better paying job first is off the farm." –MD5.*

In many cases, a partner with an off-farm job was also a partner who helped on the farm in the mornings, evenings, and weekends. While most farming couples shared the goal of eventually building the business to enable both partners to work full-time on the farm, other farm partners showed little desire to give up their off-farm job. In either case, this extra income was deemed essential in the early stages of the business. When asked about additional income, one Dutch farmer described his arrangement with his girlfriend over the phone:

> "*My girlfriend has a very good paying job, so that's what…she's sitting next to me laughing, so...without my girlfriend...the garden wouldn't exist."* –NL6

Survey respondents also utilized multifunctional farm activities to generate income. While the survey did not ask about the specifics types of these activities, interview respondents mentioned a number of alternative income streams including educational programming, teaching fees, stipends for hosting trainees, and providing care. In addition, diversification of production was discussed as an important choice not just for agroecological ideals, but also as a business strategy, to ensure resilience in the case of a crop failure and access to multiple markets. One Maryland farmer, who had structured his business primary around small wholesale accounts with restaurants, described his decision to start a winter CSA, primarily to improve off-season cash flow. Another U.S. grower described her long term vision of "becoming known" for her knowledge so that as farming becomes more physically challenging in older age, she will still have a way to capitalize on her experience. For some farmers, skills acquired in past careers provide an avenue for additional farm income streams. In the Netherlands, a farming couple planned their business after a career of working in the care industry around creating a care farm. Another Dutch farmer with a past career as a teacher has found a way to generate side income for her farm by offering educational programming.

Value-added products were another source of diverse farm income streams, particularly on U.S. farms. A farming couple in Maryland who came to agriculture after careers in law and education, explained that in their perspective value-added products are the key to earning a living from a small acreage, and that they wanted their farm to serve as an example for other farmers of what was possible. Their farm produced primarily value added products with a focus on an on-site brewery using farm-grown hops. Another farmer, an orchardist in the U.S., described their recent decision to start fermenting cider from their apples, as well as their plans to distill apple Calvados on farm. For her, the cider business was an exciting way to bolster the bottom line of the farm, and she hopes to one day create a business successful enough for her daughter to inherit. Other value-added products included farmstead cheeses, dyed and spun yarns made from sheep's wool, goats milk soap and cosmetics, and flower arrangements. Many of the Maryland flower growers I spoke with either currently offer or hope to offer florist services and flower arrangement courses.

There were also observable differences in additional income sources between the U.S. and the Netherlands, with fewer farmers in the Netherlands relying on

additional income of any type. Eighteen percent of Dutch farmers had no additional income sources compared with only seven percent of those in the U.S. The reasons for these differences are not entirely clear, and more research is needed to explore these differences and activities.

Direct to Consumer

In addition to other sources of income, first generation farmers have structured their business to ensure high prices, a focus on quality, and easy market access by focusing on short supply chains and diverse marketing outlets. While direct to consumer sales were the most important sales outlet, short supply chains such as direct to restaurant or retail were valuable secondary outlets (see Chapter 4, At a Glance for more detail). The relative importance of various sales outlets was similar in both the U.S. and in the Netherlands, indicating that short-supply chains were a successful marketing strategy in both contexts.

In interviews, these short supply chains took on various forms, and new innovations seemed to be constantly emerging. Variations on the community supported agriculture model were popular both among Dutch and U.S. interview participants. Other models included direct to restaurant (or florists) sales, farm stands, farmers markets, and sales to local produce aggregators. Many of the farmers interviewed were putting a new twist on the original CSA[2] model, often in response to consumer demands. A couple farmers were developing what they called an "A la carte" CSA in which members could order desired products from an availability list each week, rather than receiving a set share. Several Dutch farmers operated self-harvest CSAs in which members harvested their own produce at desired quantities, and a few farms operated CSA-inspired systems that worked on a debit model, where members pay in advance and receive a seasonal credit. Another Maryland farmer differentiated her CSA by planning her harvests around specific recipes. These innovations result both from individual creativity, as well as a need to evolve to changing market demands, competition, and consumer expectations. One Dutch farmer who had been in the business for just over 10 years selling vegetable subscriptions to members observed:

> "*First, we had the impression that people like to have a lot of vegetables for not so much money, and that perhaps it was. But now it's changing and people prefer to have exactly what they want and they are willing to pay a higher price for it as well. So I think that's what we have to find out, how we want to adapt for that."* NL2

As alternative food movements have grown in popularity, consumer expectations and market access evolves. In the U.S. several interview participants commented on the saturation of farmers markets, and how, specifically, the rapid proliferation of markets in Maryland has not come with a similar increase in customers. Thus, they

[2] CSA is an agricultural marketing system that stands for Community Supported Agriculture. In it's original conception consumers share both the risks and the rewards of the season with the farmer by purchasing a "share" of the farm at the beginning of the season. In return the consumer receives a share of the harvest throughout the season that varies with product availability. In this way, the farmer receives beginning of season capital, and the consumer shares in the risks of crop failure. Some scholars have argued, however, that the risk is not actually shared equally between farmer and consumer, see Galt (2013).

find that they make fewer sales at any given market, and that being accepted to a successful market can be a political game that often excludes beginning farmers. This has led many to avoid farmers markets entirely, or pursue other marketing options, such as on-farm retail, and direct sales to other businesses: farmers, restaurants, and florists.

Restaurant sales were the second most popular category of sales among survey respondents, and an important marketing outlet for interview respondents as well. While many farmers developed individual, and personal relationships with the buyers for these businesses, a few farmers were using the help of aggregating services. These relatively new local food aggregators were preforming a pivotal service for many interview respondents. Several Maryland participants utilized the aggregating service Chesapeake Farm to Table, a farmer-initiated online marketplace in which farmers post weekly product availability, and chefs and institutional buyers place orders. Farmers deliver to a centralized location, and the aggregator assembles and distributes all weekly orders. One Maryland farmer described the benefit of such technology as streamlining his weekly workflow:

> *"You want to go and you want to sell to every restaurant in the city. And you send an email out with your availability and it has 10 pounds of lettuce mix on there, and this guy buys 3, and that guy buys 3, and this guy buys 5. Well, automatically you have to call somebody and say, I don't have that. With this technology, there is none of that…It deducts automatically…It's so much different and that learning curve of every single farm going to every restaurant, and delivering on their own and doing all that, just eliminated with one stroke of the pen." MD20*

Similarly, a Dutch respondent mentioned the similar service provided by the organization *Streekboer* that serves individual consumers. In addition, several Dutch interview participants had created their own buying clubs centered-around their farm. One herb farmer described how her farm was the distribution point for an organic buying club in which members could order products from a number of local farms, as well as bulk products such as grains or beans.

The reasons farmers engaged in these short supply chains were both pragmatic and value driven. Short supply chains not only enabled market access, but also provided high prices and a focus on quality over quantity of production: a market niche well suited to small-scale agriculture. For some, direct marketing was chosen primarily due to market access and price premiums. Not surprisingly, the only farmers interviewed who were engaged in more conventional supply chains were larger in scale. For others, however, the aspect of creating community and building relationships with customers is central. They enjoy the regular feedback, and take pride in the relationships. For these farmers, educating consumers about agriculture and food is a rewarding part of the work that they do. Some of these farmers were motivated by a desire to feed the community, while for others, relationship building was more important. A few such farmers mentioned their interest in eventually moving beyond a system in which only the upper economic tiers can afford organic or farm-fresh food.

> *"I would like that organic wouldn't mean – I would like to see, especially, lower income areas that are fighting diabetes and some of these health issues even more so because of eating habits and economics. I think I would like to see that it's not just something that belongs to the middle class or upper middle class or something like that. It doesn't have to be expensive." MD17*

The level of (desired) interaction that farmers had with their clients was highly variable, with even some CSA farmers mentioning that they didn't actually have much interaction with their clients if the customers harvest their own produce. The two farmers quoted below illustrate the difference in perspective.

> *"I'm way more about making a great product than I am about— I know some people really like that whole—and they pound it into your head, 'to be a successful farmer today, you've got to make that face to face connection'….Hello, introvert [referencing self]. I want to spend time with my chickens." MD6*

> *"So the community aspect is really important, and I don't want to be an anonymous farmer…I think it's better -- how we think about the value of food that everybody who eats food, which is everybody, knows some of how that food came to be. So short chains between consumer and producer, I think is very important as well."* NL10

Both of these groups, however, would occasionally express frustration with customer attitudes: a lack of awareness of the work that goes into production often leading to an undervaluation of the product, as well as a lack of awareness of the realities of running a farm. Farmers feel that their product is often undervalued, with consumers not sufficiently appreciating the labor demands or the true cost of food. One farmer describes her decision to produce flowers rather than vegetables, and varying consumer attitudes towards different products:

> "*They'll go to Starbucks and spend $7 on a coffee, but they won't spend $7 on a bunch of Kale…That was way more frustrating when I was doing vegetables. But now that I'm doing wedding industry stuff that whole dynamic has changed, because people pay more."* MD1

For some farmers, this was a key reason why they were moving towards more small-business wholesale accounts. For farmers marketing directly to consumers, consumer relations require substantial energy and time. This energy can be both a source of reward, pride, new relationships, or frustration. This ability to interact with consumers was often discussed as a necessary trait of the new, small-scale farmer: small-scale, diversified agriculture simply wouldn't be possible without short supply chains. As one Maryland grower described the need for new skills among beginning farmers.

"You have to be able to want to deal with the public. You know, traditional agriculture in Maryland is that you harvest your crop and you take it to the silo and you get your check and that's it. You don't have to deal with anybody. But if you're motivated, and you're young and you don't mind dealing with the public, you can actually make a living on a small acreage." MD18

Networks and Collaborations

The farmers in this study were engaged in robust networks with other farmers and organizations that were pivotal to overcoming challenges by enabling knowledge sharing, creating connection to markets, and forming partnerships to access land or labor.

The survey revealed farmers to be regularly engaged with farmer networks. Eighty five percent of survey respondents knew over 10 farmers personally, and generally respondents felt that most of the farmers they knew shared their values. In fact, 74% of respondents felt that over half of the farmers they knew shared their values. While the size of farmer networks varied from less than 10 farmers (15% of respondents) to over 40 (21% of respondents), farmers frequently interacted with each other. Over half of all survey respondents (51%) interacted with other farmers at least once every week, and only 11% of respondents interacted with others less than once a month. The most important reasons for these interactions with other farmers included seeking advice, learning from others, socializing and shared marketing opportunities. Although equipment and labor access were challenges faced by participants, farmer contacts provided fewer solutions in this regard (Figure 9). These networks are therefore important for pragmatic and more immediate concerns, such as sharing knowledge, as well as social connection.

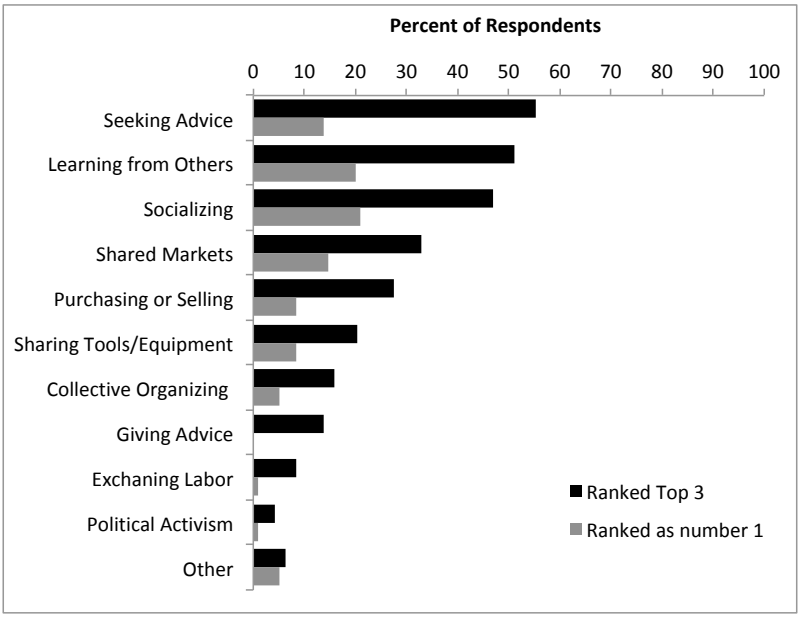


Figure 9: Most important reasons for maintaining farmer networks as reported by survey respondents.

First generation farmer networks appeared to have a broad reach that, while centered on the farmer's local region, often extended beyond. Among survey respondents only 11% of Dutch farmers and 20% of U.S. farmers only knew farmers within their own state or province. In general, the networks of Dutch farmers were far more international than U.S. farmers with 68.5% of Dutch respondents knowing at least one farmer outside the Netherlands, and 21% of the Dutch respondents knowing at least one farmer outside of Europe. By contrast, only 5.5% of U.S. respondents personally knew an international farmer. The reasons for this discrepancy are unclear, but a high level of European integration and the relatively small size of the Netherlands likely play a role. It's also possible that Dutch farmers find it necessary to look beyond the Netherlands for information and techniques. As one Dutch farmer remarked in the interviews:

> *"The things we do, we can't find the information in the Netherlands because no one else is doing it, so we have to take it from all over the world. So we need internet." NL4*

In both countries, despite the broad reach of a few connections, most of farmer's personal acquaintance networks are concentrated locally.

Organizational contacts were another important component of farmer networks, and while farmers were generally connected with fewer organizations than individuals, 16% of survey respondents were connected to over 30 organizations, and 79% were connected to over five organizations. These organizations included governmental organizations, universities, non-profits, suppliers or customers, and other businesses, with suppliers or customers being the most numerous type of connection. However, nearly 85% of all respondents were connected with at least one government organization, university and non-profit, representing 12, 14 and 18% of all connections respectively. Local organizations were also the most prevalent type of connection by geographic category, representing 55% of all connections. International organizational connections only accounted for 5% of all connections.

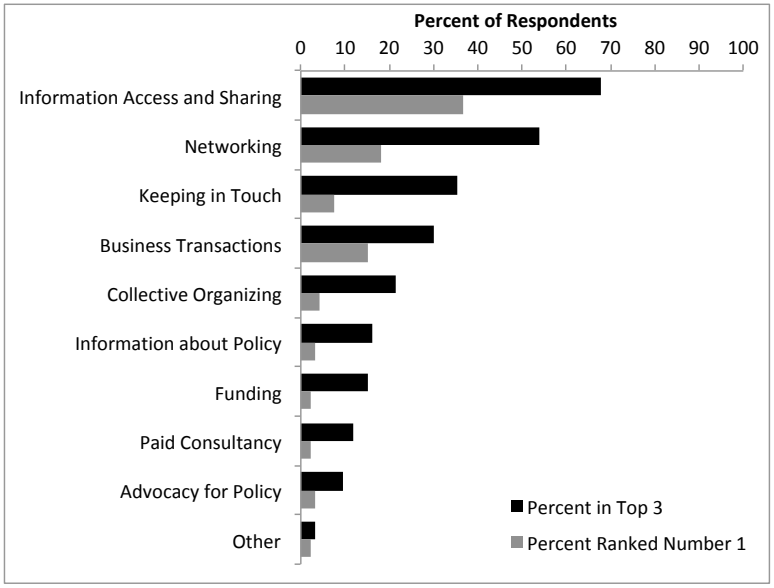


Figure 10: The most important reasons for maintaining

organizational connections as reported by survey respondents. The black bars represent respondents who ranked each reason as one of the top three most important, the grey bars represent respondents who ranked each reason as the most important.

The reasons behind organizational connections were similar to the motivations for interactions with individual farmers. The most important reasons for organizational connections included information access and sharing, networking, keeping in touch and business transactions. Although knowledge and network access were key services provided by organizations, formalized consultancy services were far less popular than more informal knowledge exchange (Figure 10).

Interview data further reinforced these observations of the importance of networks for farmers in exchanging knowledge, forming partnerships, accessing markets, and socializing. Participants were highly engaged in local, and sometimes regional and national networks. As with the survey results, the exchange of knowledge was one of the most important practical services provided by both formal and informal networks. Several farmers told of being part of email or messaging groups to share information on practices. With smart phone technology, a text message could be sent to a group of other farmers from the field to inquire about garlic spacing or to share marketing opportunities. As one farmer described:

> *"It also helps to share information with the other farmers that I'm constantly like almost on a daily basis 'hey, are you doing this? How are you doing this? Can I borrow that thing that you have?' You know, all that makes it so much easier."* MD4

In addition, membership in formalized, regional or national, professional associations was a key forum for knowledge exchange in both the U.S. and the Netherlands. These associations often centered on specific products or practices, and included groups like the Maryland Cut Flowers Association, the Northeast Regional Hop Alliance or the Biotuinders, a group of organic market gardeners in the Netherlands. Several of the farmers interviewed were actually responsible for founding or initiating associations of other farmers, from uniting a group of urban growers to improve market access to organizing organic market gardeners to lobby for lower certification fees. Perhaps due to experience gained in past careers, beginning farmers in the study population were willing to collectively organize even at an early stage in their business. Several farmers also hired consultants, collaborated with extension services, or utilized University student projects to access knowledge. However, the flow of knowledge was often two-directional, with farmers having collaborative arrangements with training programs, schools or professional organizations in order to share their knowledge as well as gain knowledge.

Notably, the internet empowered farmers to expand their knowledge networks beyond personal acquaintances in their local region. Many farmers stressed the importance of social media, email lists and online networks in connecting with other farmers, both locally and farther afield. These networks could be composed of

groups of farmers who know each other personally, or groups of farmers who share an interest or a characteristic, such as location or farming practice. In addition, farmers also relied on the internet and books to access information from a number of influential "celebrity" farmers around the world. These included farmers such as Jean Martin Fortier and Curtis Stone in Canada, Elliott Coleman in Vermont, Joel Salatin in Virginia, Perrine and Charles Herve-Gruyer at De Bec Hellouin in France, Taco Blom in Belgium, Mark Shepard in Wisconsin, and the flower farmers at Floret in Washington State. Interview participants often credited the stories of these celebrity farmers with inspiring them to enter agriculture, and their websites, books, courses, YouTube channels and social media accounts as being essential sources of techniques and information. A few names, particularly Jean Martin Fortier, were cited frequently in interviews on both continents. While the Internet has helped propel some of these farmers to near celebrity status, it has also enabled farmers as far away as Maryland and the Netherlands to experiment with techniques trialed on a farm in Canada. Often these celebrity farmers share not just information, but philosophies and ideologies that are helping to shape the first generation farmer's agricultural foundation. I'll address this in more detail in the next section on technology and the adoption of specific tools.

In addition to knowledge networks, many interview participants actively sought out more formalized collaborations, with farmers and other organizations in order to access land or markets.

Collaborative arrangements to enable land access was a common theme among first generation farmers, and often proved to be essential in overcoming this substantial hurdle. These collaborations took many forms. Among interview participants, four farmers had accessed land with the help of a support program. In the U.S. these programs included a new farmer program that matches farmers with landowners, and a state run agricultural easement program that restricts development, thus reducing lease and sale prices. In the Netherlands, one farmer had used the government-led land redistribution program to acquire a suitable number of land parcels around her home over the course of a 19-year strategy of buying nearby, small parcels. More commonly, however, farmers independently formed collaborations to access land, with both municipalities and private landowners. Interestingly, in the Netherlands five participants had accessed city-owned land through collaboration with a municipality. This arrangement only existed for one U.S. participant, an urban grower in Baltimore City, who had acquired her plot through Baltimore's Adopt a Lot program. Ten additional participants had accessed land through non-traditional arrangements with landowners, six in the Netherlands and four in the U.S. These included lucky connections with landowners who leased land below market rate, associations with larger-scale farmers to use their space, and sharecropping arrangements with private landowners. Farmers often feel very lucky to have accessed their land, and credit success to their personal connections.

Farmer networks were also discussed in relation to market access. It was common for farmers in both countries to cooperate on joint marketing efforts to pool their products to reach a larger client base. In addition, social connections were also helpful in accessing competitive markets, such as securing a coveted space in a

farmers market, or making contact with a new restaurant. These market access connections were both informal –such as receiving a tip from a friend—and formalized under cooperative sales organizations as mentioned in the direct sales section.

Finally, formal collaborations were also common within the confines of a single farm business. Particularly in the Netherlands, many of the interview participants started their farms with a non-romantic, business partner, or approached a more experienced farmer about a partnership. This often facilitated sharing of knowledge and workload, while bringing complementary skills to the business. While overall collaborations and partnerships were discussed in positive terms, several farmers did mention the challenges that these relationships could bring in terms of aligning ideas or vision for the business, or the ability to make quick decisions.

Given the importance of farmer networks for knowledge and support, it is perhaps not surprising that participants often expressed enthusiasm and affection for the farming communities they have formed, both for business practicalities, but also for the creation of a tight-knit, social circle. As these two farmers reveal, farmer networks provided a sense of belonging and moral support:

> *"The people are awesome. The people are so great. I've met awesome, like, just like really, really good friends. Even if people don't go on to farm, I feel like farming is a really good place to find community." MD1*

> *"So mostly the farmers that are like me, we try to be smart, and we try to do things different and we try to be innovative. And I love all of them. They are mostly just such fun people and I'm so happy that I'm part of that group!" NL9*

Most farmers felt that their community was primarily composed of people farming in a similar manner. They saw divides in farmers more generally as being organized around scale, experience, type of production and ethic (organic vs. conventional, etc.). For some female farmers, gender could also be a dividing line when networking with traditional farmers. Farmers' comfort level in interacting with those different than themselves was variable. Sometimes a connection was made with a very different farmer out of necessity because the interview participant didn't perceive other local farmers practicing a similar type of agriculture. Other participants mentioned a difficultly in being taken seriously by more traditional farmers. This could lead to substantial challenges and discouragement, particularly in communities where farmers felt more isolated from similar farmers. All the same, drama or discord in a network or community was seldom mentioned, and overall networks were spoken of in primarily positive terms.

<u>Selected Quotes, other farmers:</u>

> *"One guy is farming on 2,000 acres, and I'm farming on 2. How can we possibly have anything in common and connect? And it turns out that we do. So I've really enjoyed interacting with other farmers around the state, and also working with other farmers." MD10*

"I will let these guys mentor me. They're okay with a woman asking a question, and you know telling us. They just don't really treat me like an equal. Not all of them, some are really nice, but I'm okay if they want to play big brother. I'm alright with that, because I do know that they've got information that I would really love to have." MD14

"And I can have lots of good talks with others. They will never become organic, but we can talk about things like non-tillage. You find each other on the techniques, on the practices. How are you doing this and why?" NL11

Farmer networks and formal and informal collaboration was an integral strategy for navigating some of the highest barriers faced by new entrants to agriculture: land access, knowledge and markets.

Technology

If networks and community were a vital source of knowledge and shared resources, technology was the solution for labor shortages, affordable infrastructure, and knowledge access. Technology in this section has a broad definition, and includes mechanical farm equipment, hand tools, computer or web software, and high-tech farm innovations.

Interview participants expressed a range of attitudes towards different types of technology, from enthusiasm for any and all technological advances, to a cautious skepticism and a preference for human-based labor. The technological relations of each individual farm varied, from those that were aiming for a mechanized operation to those that used primarily hand-tools. About nine interview participants expressed enthusiasm for mechanization and a desire to further shift labor from humans to machines, while a few others wished to focus on manual labor.

Selected quotes, attitudes towards technology:

"I'm so used to doing things by hand, and I don't know really why, but I'm a little bit skeptical of high technological food production because I'm not a hundred percent sure we already understand how our food—how a head of lettuce grows." NL10

"There is nothing wrong with technology, but, and that's the big 'but,' it has to be made—that we can use it forever. That we can repair it and it's not dependent on non-renewable sources, like oil." NL4

"There's something called the farm bot, and you plant these beds and then the farm bot goes and checks each one for the nutrient levels…I was like I want a farm bot! I want a weed bot! I want everything… I think that technology can make us more efficient and better farmers and deliver a better product, a more nutritious product. Bring it on."–MD6

"I would like to have more of it." MD14 in reference to technology.

Notwithstanding this heterogeneity, a few general themes emerged. Despite industry excitement about precision agriculture and increased automation, on their small farms interview participants generally embraced a style of technology that in

this thesis I term small-farm tech. Rather than being the product of a company's multimillion dollar R &D budget, this small farm tech was often the result of an informal, experience-driven, farmer-led engineering process; the result of which was then patented, and disseminated farmer-to-farmer, promoted through social media and via small-farm supply companies. Yet, these innovations are not nostalgia for more traditional form of agriculture. They are often modern examples of engineering, designed by farmers and for farmers that incorporate contemporary digital or tool technology. Moreover, adoption of this type of small-farm technology did not preclude the same farmers from acquiring expert-designed equipment. In addition to this small farm tech, farmers in this study espouse web-based tools and social media as indispensable assets that streamline farm management, marketing, knowledge sharing, and workflow. In this section, I'll discuss this small farm technology and the web-based technologies used by farmers in turn.

Small Farm Technology:
This category included a variety of small machines and innovations that had often been designed or modified, and subsequently popularized by a handful of influential farmers, such as Elliott Coleman or JM Fortier. These tools include innovations such as:

- The Soil Tilther: A hand-held, electric-drill powered, tillage machine that disturbs only the top 5cm of soil for final bed preparation.
- The Coolbot: A converter that allows a cold storage unit to be affordably built from a window air-conditioning unit. Originally designed by a partnership between small-scale farmers and Cornell University this invention is now widespread throughout the United States.
- Portable Chicken Housing: Most of the farmers raising chickens who were interviewed are using some sort of portable chicken housing. Many are using designs based off of the "chicken tractor" popularized by Joel Salatin. One farmer in the study population had used an Elliott Coleman hoophouse design, and with a few modifications converted it to a chicken coop.
- Season Extension: Hoophouses, low tunnels, caterpillar tunnels, and row cover were common season extension practices in both countries. Many farmers were using designs and techniques popularized by Vermont-based organic farmer, Elliott Coleman.

In many cases the tools I consider in the small-farm technology category were not necessarily designed by farmers, but have been popularized by influential small-scale growers. These include things like the BCS line of walk-behind tractors, two-wheeled tractors made by an Italian company and endorsed by JM Fortier that are affordable and well-suited to a small-scale.

This small farm technology was discussed in nearly half of the interviews, and notably did not appear in any interviews with conventional farms, which tended to be larger scale. Often, this sort of technology was spoken of in association with an affinity for lower-tech solutions or the celebrity farmers who popularized their use. As one Dutch farmer described his decision to buy tools like the Coolbot and the soil tilther,

> "*I just stole all those ideas from JM and Curtis Stone and that's why I'm so happy that they are experimenting with those sorts of things. And when they say, 'hey, this is an awesome thing,' then I buy it too*." –NL6

Purchasing tools in such a way does not preclude on-farm innovation. This same farmer also described his intent to make a flame weeder out of a baby carriage he found recently, and another farmer described how they make much of their own equipment. Nevertheless, while a couple of farmers mentioned designing and building their own tools, most seemed to be purchasing tools or equipment. In many cases influential "celebrity farmers" have helped drive tool or technique adoption. Market gardener, Jean Martin Fortier, seemed to be particularly influential through his book and YouTube series. These data show that first generation farmer's approach to technology goes beyond the simple dichotomy between farmer-based innovation and reliance on outside experts. In most cases, technological developments are a hybrid, and as shown here, the "outside expert" may actually be another, more experienced farmer sharing their wisdom and innovations through the Internet. The role of the Internet in the dissemination of these innovations is crucial, as many farmers discovered tools and techniques via YouTube and social media. The Internet is blurring the boundaries between expert and farmer. Next, I'll turn to the many ways in which farmers rely on the Internet and web-based technologies.

Social Media and Web Based Tech

Web-based or social media technologies were discussed by 79% of all interview participants. These technologies included social media, and computer-based platforms for record keeping, document sharing, farm management and sales.

Social media was a vital marketing tool for many participants, a strategy closely connected with direct to consumer sales. Instagram and Facebook were popular avenues for social media, and one farmer revealed that she has a daily schedule for posting photos on Instagram. Farmers also connected with consumers over the Internet via email mailing lists. A Dutch farmer credited his email newsletter as being an important tool for reminding customers about the farm after a period of closure in the winter. These tools helped farmers share the story behind their farm, build a robust brand and shape the purchasing habits of their clients.

In addition, social media use went well beyond marketing. These platforms were also valuable for connecting with other farmers, sharing knowledge and building a reputation. The Internet was one of the most common sources of knowledge for the farmers interviewed, and YouTube videos produced by influential farmers were particularly popular. A U.S. flower grower commented that in addition to passively gaining knowledge, social media also helped facilitate asking questions of other growers. It was easier to get a response from a grower she does not know personally by posing a question on social media, rather than sending a personal email or phone call. Social media allows for a low-effort, low-pressure form of communication that enables farmers to expand their network of mentors beyond those in their local area. It is worth noting not all farmers who used social media for

their business used it in their personal lives. Several farmers mentioned that they don't have or don't enjoy personal social media accounts, yet find it to be a worthwhile business tool. In the words of one such farmer:

> *"I do think it plays an important role, because everybody's on it [social media]. Not only customer-wise, but farmers. If we don't have a presence there I feel like we're slacking behind. We have to have at least a little bit. It's the age."* MD12

Many farmers also discussed the importance of web or computer-based farm management and record keeping software for crop planning, checking the weather, maintaining records and monitoring animal health. These technologies enhanced efficiency, and enabled farmers to better assess the successes and failures to make adjustments for the future. As one U.S. farmer described:

> "*We use Small Farm Central, which is a website software type thing that manages our inventory and manages all of the CSA members sign-ups and their payments and their accounts, and that takes that burden away from me. Our first year, we had paper contracts and checks being mailed to me and I was keeping stuff in spreadsheets. There's so many other old farmers who literally just have notebooks they carry around in their pocket…Thank god we're not doing that!" MD4*

Another Maryland farmer mentioned that she downloaded crop-planning templates designed by a farmer on the West Coast. A Dutch farmer revealed that web-based technologies, such as Google Drive, enabled the easy sharing of information with her business partners, by providing real time updates on actions taken on particular fields. A dairy farmer in Maryland spoke about the cloud-connected "Fitbits" (pedometers) that her cows wear to monitor their health. A handful of farmers also cited automated sensors that they use or would like to use to regulate greenhouse temperature, control irrigation or monitor animal nutrition. Finally, web technology was also a useful tool for sales, with some farmers selling through an online store on their website, or a web-based local food aggregator.

By enhancing the spread of information and streamlining workflow, the Internet and computer-based technologies are reshaping agriculture for beginning, first generation farmers. Small-farm technology disseminated via online channels is obscuring the boundaries between expert-led and farmer-led innovation and knowledge. Notwithstanding the small-scale or ecological orientation of many first generation farmers, they are often engaged with the latest technology, but attitudes towards technology and mechanization were one of the ways in which the study population differed most from one another. Not all farmers embraced every technological development, with a number of farmers taking a more cautious or skeptical approach to outside technology. Other farmers expressed open enthusiasm for any and all advances, from robot harvesters to GPS fertilizers.

Synthesis: Challenges and Solutions

The open-ended interview format yielded heterogeneous responses, revealing a wide range of challenges and solutions for first generation farmers. Yet, despite different contexts, farmers in the Netherlands and the U.S. faced similar barriers and used many of the same techniques and technologies to overcome them. The farming style of study participants was as much shaped by values and choice as it was by the challenges they faced. Land and financial limitations led new entrants to small-scale farms just as much as training, values and lifestyle interest. In addition, although some found consumer relationships to be rewarding, direct to consumer sales were as much a survival strategy to access markets and receive premium prices, as they were a value-driven choice. Similarly, a strong involvement in networks was not only a personal preference for enjoying the farming community, but also an essential source of knowledge and resources. The Internet, small farm technology, and occasionally increasing mechanization helped farmers combat the challenges of a high workload and labor shortages.

These challenges not only squeeze new farmers, but are also shaping the future of agriculture. The high financial burden and the reliance on non-farm income necessitates not only long hours, but also adds an element of privilege to who can afford to become a farmer. In my study population, the success stories are often those with a high-earning partner, those who have made money from a past career, or those who have harnessed their creativity to access low cost land or equipment. Often farming is only accessible to those who can afford to work for free for a number of years: individuals from higher socioeconomic brackets. Support programs that can help lower investment barriers, and bridge the gap until farm businesses can grow past their break-even point are essential for encouraging new agricultural entrants and ensuring inclusivity. This is not to say that all farmers in the study population were wealthy or came from wealthy families. In fact, there is a general acknowledgement that farming requires accepting a lifestyle that offers fewer financial rewards than other professions. Yet, non-agricultural financial resources were often key to survival.

Other challenges shape agriculture as well. Climate change inspires resilient and diverse farm designs, regulatory barriers encourage new entrants to remain small scale or to avoid certain activities to reduce associated investments, and a lack of knowledge has inspired a vibrant online community for sharing information and resources. This has allowed a handful of successful farmers to rise to near celebrity status, influencing new entrants in both countries. First generation farmers are often turning to the online information resources of these influencers before they turn to traditional agricultural extension or consulting services. Future research is needed to examine the role and influence of these farmer-celebrities. This shifting of the power balance in agriculture from University centered expertise, to farmer-to-farmer knowledge is perhaps unsurprising given that study participants expressed difficulty in being taken seriously by traditional extension professionals.

First generation farmers show constant adaptation to a changing landscape. Not only is farming in a different way inherently attractive to them, but they also recognize that the context of modern agriculture requires a new approach. New

entrants are not rugged individualists isolated on independent farms, but they are interconnected and collaborative, connected to each other and consumers and consciously making an effort to carve out a niche in challenging agricultural terrain.

Chapter 7: Discussion and Conclusion

Before I began this research, I heard skepticism as to whether I would find new entrants to agriculture given the social and economic challenges of farming. While understudied, new entrants not only exist, but are also practicing styles of farming that do not fit conventional labels and expectations. They are a diverse group of entrepreneurial individuals who must balance their environmental and social values within the context of running a business. Squeezed by factors such as limited finances, land access, a steep learning curve, labor shortages and regulatory structures, they have shaped their farms in a pattern that fits within the confines of the agricultural context. Locally and ecologically embedded, their farms are typically small-scale, market directly and use ecologically oriented practices. In order to succeed, they employ innovative solutions such as direct marketing strategies, bio-intensive growing practices, applying appropriate technology and relying on a strong network for knowledge and collaboration.

While perhaps echoing the "back to the land" movement of the 1960s, these modern new entrants to agriculture do not conjure images of counter-culture hippies, but pragmatic small business owners. In this final chapter, I'll discuss the findings from this research in regards to the original research questions and the implications for existing theory and agricultural practice. I'll then reflect on the methodology and research limitations, as well as make recommendations for further research. This chapter will end with final conclusions from this thesis.

VALUES, PRACTICES AND RELATIONS: RESEARCH QUESTIONS 1 THROUGH 4

I began this research to investigate to what extent new entrants to agriculture reflect change in the food system. Before this is addressed, each of the four sub-research questions is reviewed.

What values are important to beginning, first generation farmers?

First generation farmers are not homogenous, but most have been motivated to enter agriculture by a search for meaning, independence and fulfillment in their careers. Generally, their values are a balancing act between various social motivations and the indispensable ethics to run a profitable business. The social motivations varied among this heterogeneous group of farmers, but often included a valuation of the farming lifestyle (independence, connection to the outdoors, and diversity of required skills), in addition to a sense of environmentalism, and a desire to build community and educate others. Within their conception of what makes a good farmer, a business ethic was perhaps the most salient value, followed by environmentalism. Their conceptualization of a good farmer also included the importance of a strong land and work ethic, adaptability, and rooting decisions in observation.

The emphasis on lifestyle, community and environmentalism was consistent with previous work on newcomers to agriculture (Inwood, et al., 2013; Monller & Fuller, 2016), but the emphasis on business revealed by this research highlights a topic that

was often a side note of previous studies. Inwood, et al. (2013) find that young farmers place a greater emphasis on economic values than their older counterparts, suggesting that this may be due to pressure to succeed. This research reveals that this economic emphasis is not only a quality of young farmers, but of new entrants to agriculture of all ages. Furthermore, I would not conclude that this business priority was solely due to social (or economic) pressure, as a number of participants mentioned the business aspects of farming as both an attractant to the profession and a source of enjoyment. Rather, this research positions business and entrepreneurial identity as a core value.

To what extent are those values expressed in their practices?
Overall first generation farmers are practicing a diversified, small-scale, ecologically oriented agriculture that aligns well with their environmental ethics. According to survey responses, the biggest gap between ideals and current practices falls within the use of external versus internal resources for inputs such as fertilizer and animal feed. These practices, however, have relatively low salience. Having a greater community impact appears to be a change that first generation farmers value more. One area in which values are misaligned from practices was not captured by the survey data, but rather by the interviews. Many of the beginning, first generation farmers I spoke with had not yet managed to make their businesses sufficiently profitable. While this is to be expected given that many interview participants had under five years experience running their business it represents a substantial hurdle and a constraining force on achieving alignment in other values.

Past research has shown that when it comes to adopting environmentally-friendly practices, farmers' decision making is as varied as it is complex; economic motivations are often secondary to socio-cultural considerations, practical concerns, and the compounding effects of other practices (Carlisle, 2016; Warren et al., 2016). First generation farmers place a high value on environmental and community ethics; thus, they are likely to be already receptive to interventions that promote sustainability or multifunctionality provided they align with business concerns. In fact, the enthusiasm for low tillage technologies, long the Achilles heel of sustainability in organic agriculture, demonstrates their openness to new ideas that enable better alignment with values. The challenge with promoting sustainability for these farmers lies not in environmental concerns, but rather with ensuring economic viability.

The small-scale, diversified, vegetable-oriented, organic practices of most of the study participants is consistent with the recent results of a survey of U.S. based young farmers, in which respondents were predominantly small-scale (median size 7.7ha), organic (63% of respondents), vegetable growers (72%) (Ackoff, et al., 2017). This study also found that young farmers struggled to make their farm business financially viable, with 61% needing to work off-farm jobs (Ackoff, et al., 2017).

How do beginning, first generation farmers relate to markets and technology?
With a few exceptions, the farmers in this study are strongly rooted within various alternative food networks, with the vast majority of farmers in the study population

selling direct to consumer for the most of their sales. This population has devised diverse marketing outlets in order to create resilient businesses. Even desires to move towards more distant markets, often stop short of conventional supply chains, focusing instead on other alternative food networks, such as small-volume, restaurant or florist wholesale accounts, as well as local produce aggregators and cooperatives. Moreover, first generation farmers are constantly refining the strategies of these networks to better tailor them to farmer or consumer needs. These modifications include innovations such as CSAs that operate on an on-demand model, self-harvest initiatives, cooperatives and collective sales structures.

First generation farmers are not averse to technology, and value its appropriate application to meet various challenges. The Internet and web-based technologies, including automated monitoring and controls, are the most universal technological adoptions by this group. Beyond these technologies, variations in levels of mechanization appear to be one of the ways in which first generation farmers differ most from one another in their farming style.

New entrants to agriculture see themselves positioned as slightly to the right of center between productionism and agroecology in terms of their reliance on outside experts versus on farm innovation. They turn to the Internet and other farmers, particularly the publications of celebrity farmers, more frequently then they mention seeking help from university extension services or professional consulting agencies. In the productionist view, technology and expertise resides with Universities, government agencies or agricultural corporations (Wood et al., 2014). While they still seek expertise from off farm, the farmers in this study are shifting the balance of power in agriculture away from formalized institutions to farmer experts. These findings are consistent with past research that demonstrates that farmers favor the knowledge of those with farming experience (Wood et al., 2014).

The influence of a group of celebrity farmers on the first generation farmers in the study population is a novel finding from this research. This finding is consistent with the argument of Phillipov and Goodman (2017); they describe a cultural shift in which farmers are undergoing a process of “celebrification” with individuals such as Joel Salatin receiving far more public attention than was typical of farmers in the past. However, the extent of the influence of these celebrity farmers on farming practices, and entry in to agriculture has yet to be explored within the scientific literature. There is anecdotal evidence from popular media and farming periodicals that farmers such as JM Fortier and Curtis Stone are inspiring new entrants to agriculture to adopt their models and methods, as observed by Frost (2016). These celebrity farmers are looked to as experts in that they are guiding the methods, tools, inputs and farm design for many new farmers. Research that examines not just the scope and scale of their influence, but the viability of their practices is called for.

In one of the few studies on such practices in developed countries, the researchers analyzed the economic viability of small-scale market gardening (less than 1.5 ha), using a computer model calibrated with data from 20 French microfarms. They found that economic viability, defined at a level ranging from 600 to 1400 euros per

month, was feasible but risky and that bio-intensive, low-input models were more promising than those that designed around input substitution (Morel, San Cristobal, & Leger, 2017). This finding is echoed by the concerns expressed by several study participants who observed that the cost of initial investments, the high labor demand, and the three to five years necessary to develop a profitable business created a taxing start up stage. As one farmer revealed:

> *"I read some of the books, like [The New] Organic Grower and Market Gardener, some of the popular ones. And I had this idea that if I invest 5 – 8 thousand dollars than I will make lots of money doing this, or I could at least make a living, and I wish I was more prepared for just how little you make and how much you have to invest." MD20*

While these models may present an economically feasible, exciting solution that challenges the 'go big or get out' mantra of productionist agriculture, there is a need for business training and financial support if new agricultural entrants are going to be able to succeed. Overall, the marketing gardening models promoted by JM Fortier and Curtis Stone have largely been ignored by traditional agronomists, particularly in the context of developed nations, where these farms do not often even meet the definition of commercial agricultural enterprises due to their small scale. However, given that Jean Martin Fortier earns over six figures on his 1.5 acre (0.6 ha) farm (Fortier, 2014) the need to reassess this research bias is evident. The "celebrity" status of these influential farmers adds value to these farming models, but can that value be reproduced by farmers in different circumstances?

To what extent are beginning, first generation farmers part of a broader social movement?

Many interview participants explicitly see themselves as part of a contingent of farmers trying to "do things differently," or "set an example," while a few others shy away from any explicit declaration that they are part of a movement. Moreover, some farmers, often those with a more conventional stance, do not desire to change traditional farming practices, but rather want to ensure the survival of family farmers. Whether making change is part of the stated mission of each individual farm is moot. New entrants to agriculture are forced to create new pathways to success, and are, thus all at the vanguard of a movement to preserve the role of small-scale family farming. While each farmer has a different vision for the food system, with some having transformational aspirations, many others see large-scale agriculture as valuable. Beginning, first generation farmers approach others in their profession with a palpable undercurrent of respect despite differences in practices or opinion. Regardless of which stance they take, most first generation farmers tend to see other farmers, of all scales and styles, as allies rather than competitors in achieving this goal.

New entrants to agriculture have highly integrated networks of other farmers and organizations, sharing information over great distances. These findings are consistent with Mailfert's (2007) study, in which new entrants to agriculture in rural France tended to favor weak ties at a greater distance with farmers similar to themselves, rather than strong ties with neighbors who may be practicing a very

different type of agriculture. The importance of the Internet in creating and maintaining these connections for new entrants to agriculture is a valuable finding from this thesis that deserves further exploration. These connections enable farmers to share not only knowledge and techniques by philosophies and values.

An Agricultural Paradigm Shift?

This brings us back to the question of to what extent beginning, first generation farmers represent change in the food system. Beginning, first generation farmers are engaged in a form of agriculture that is distinct from productionist systems in terms of scale, diversity, direct marketing, ecologically-oriented fertility and pest control, and reliance on small-farm technology and farmer-to-farmer innovations. Despite this, first generation farmers retain elements of a productionist outlook. For example, survey data revealed that they view their farms as spaces of production. In addition, first generation farmers struggle to always maximize the use of internal resources for fertilizer, feed and pest control, leading to a gap between values and ideals. Overall, while working within the framework of a capitalist system that values output, beginning, first generation farmers are practicing a radically different type of agriculture than images conjured by the productionist paradigm. These practices have been driven both by values, and the constraining challenges of entry in agriculture. In this sense, the divergence of beginning, first generation farmers may in fact be a side effect of the productionist system.

Yet it would be a mistake to conclude that beginning, first generation farmers are uniform in their farming style. While they recognize that there is a need to approach agriculture differently than previous generations, as much for economic survival as for social good, their individual approaches are highly variable and include strategies such as microfarming, market gardening, permaculture, and artisanal products. The individual farmers in this study vary in particular in regards to their values (level of environmental ethic, or community ethic), and their approach to technology and mechanization. Moreover, while most are engaged with direct to consumer sales, a few notable exceptions sell to processors or distributors. These farms typically represent operations that are larger than the average farm of study participants. While the farmers in this study are more similar to each other than to the general farming population, their heterogeneity points to the limitations of rigid classification systems, whether farming styles or identity. This supports van der Ploeg's (2009) assertion that categories of farming styles should not be transferred between context and Houden and Vanclay's (2000) observation that farming styles are best when thought of as a heuristic parable.

Due to this heterogeneity, it is useful to look at new entrants both in terms of where their farming styles fall along an axis of embeddedness between a productionist and agroecological ideal, and an axis of salience of various competing identities. I'll turn now to a discussion of identity and agricultural paradigms to look at the ways in which first generation farmers represent change.

Identity and Good Farmers

Overall, new entrant values, practices and relations are embedded towards the agroecological end of the spectrum, particularly in regards to the use of organic sources of fertility and pest control, and embedding in local communities. Practices such as direct to consumer sales, level of diversification, and soil conservation are highly salient features of the good farmer construct (Figure 10). Values such as an entrepreneurial identity and a strong sense of social ethics (land stewardship and community-centric values) are also salient in the good farmer construct. These business and social ethics can create tensions where they compete as evidenced in the decisions farmers face daily. For example, some farmers struggled to find the optimum level of diversity to balance ecological resilience with a streamlined workflow. In addition, competition in direct sales channels such as CSAs and farmers markets, inspired some Maryland farmers to seek out more distant wholesale accounts. These tensions explain the coexistence of both productionist and agroecological values, practices and relations. The resulting farm structure stems from a negotiation between the more salient aspects of identity and practical constraints. Figure 10 displays the key interview themes along the axes of salience and embeddedness.

These findings emphasize the entrepreneurial component of first generation farmer identity, and the importance of business in guiding or constraining decisions. A few studies have looked at how entrepreneurship relates to farming identity. Vesala, Perura and McElwee (2007) found that multifunctional, or "portfolio," farmers have a stronger entrepreneurial identity than conventional farmers, and Sutherland (2013) observed that the business aspects of agriculture were important to both organic and conventional farmers. However, generally entrepreneurialism has not been heavily weighted in much of the past research on farmer identity. McGuire et al. (2015) distinguished four identity types within a population of Iowa farmers: Productivist, Conservationist, Civic-Minded and Naturalist. These identities were based on survey questions that emphasized practices and civic engagement over business or marketing strategies. This is not solely research bias. In Burton and Wilson's (2006) often-cited study on farmer identity, focus groups of farmers rejected the term "entrepreneur" due to negative connotations. The researchers changed the name of this category to "diversifier," and the identity focused not so much on the valuation of business ownership, but instead on farmers that ran multifunctional businesses. While several past studies on farmer identity do include descriptors of profit objectives (i.e. a good farmer maximizes profits), few focus on more robust aspects of entrepreneurial identity. Business ownership and entrepreneurial identity can go well beyond profit goals, and include attitudes towards growth orientation, innovation, learning and risk (Vesala, et al., 2007). While the present research did not go in to depth on this issue, the results suggest that the business orientation of farmers in this research was not only a practical consideration, but a core value. Yet, due to the balancing weight of social values, these same participants may not necessarily identify with descriptors of maximizing profits. Many of the farmers interviewed were focused on creating sustainable profits rather than constant growth. Thus, the entrepreneurial identity of farmers may diverge from traditional notions of entrepreneurship. Regardless, farmers actively embraced the idea of being small business owners, innovation and a strong

learning orientation. Further exploration into what makes a good farm-business owner is an interesting component for future work on farmer identity, as well as what sets the entrepreneurial identity of new entrants apart from other farmers. All farmers are small business owners and are constrained by its demands. The differences between them lie in how they choose to structure their business to navigate these challenges.

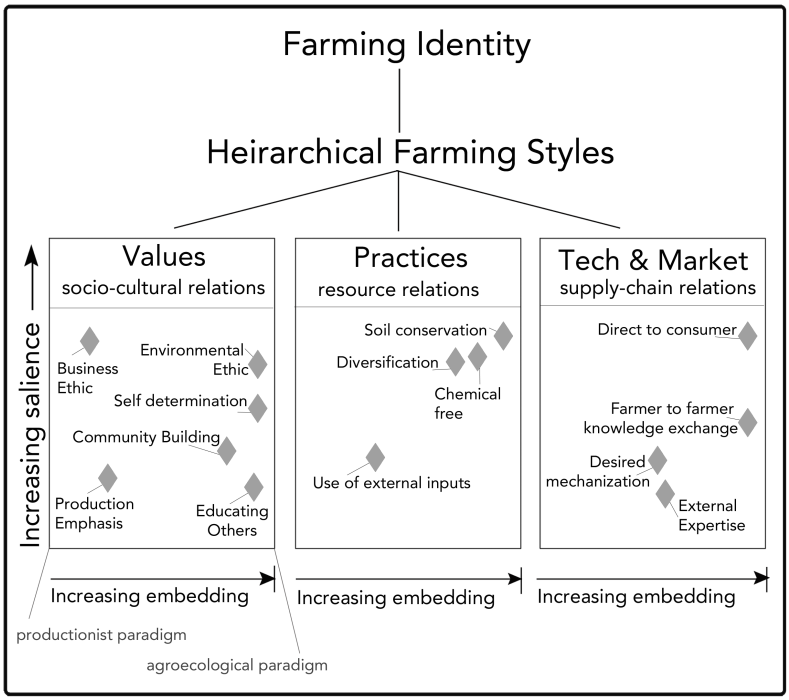


Figure 10: Positioning of key interview themes in farmers' values, practices and supply chain relations along two axes: salience of the theme to farmer identity (vertical axis), and embeddedness (horizontal axis). Items on the right side of each box represent agroecological themes that are embedded in local systems while those on the left represent productionist themes. Items at the top of each box are more salient (dominant) than those on the bottom. This figure represents an amalgamation of all farmers interviewed.

In another divergence from previous literature, research on farmer identity has found that productionist ideals are highly salient (Burton & Wilson, 2006; Herndl, 2011), and there is strong internal pressure within the farming community to not stray too far from this definition of a good farmer (Gray & Gibson, 2013). In stark contrast to the study population in this research, some studies have found that farmers actively distance themselves from sustainability concepts (Herndl, 2011). Although they still value output, the farmers in this study have a very different identity salience hierarchy with a dominant social ethic. Identity is a fluid and dynamic construct and subtle suggestion from respected community members to emphasize perhaps less-salient identity elements can gradually shift farmer identity and salience hierarchy (McGuire, et al.; Sutherland, 2013). In other words, peer pressure can encourage farmers to gradually become more conservationist. Just as Sutherland (2013) found that organic farmers may be shifting the good farmer construct of conventional farmers, new entrants to agriculture are often explicitly

asserting a desire to "do things differently." Their potential to shift agricultural identity for all farmers is an intriguing area for future research.

Despite the heterogeneity of study participants, on balance, and when compared to other farmers, they are shifting the direction of agriculture increasingly away from productionist traditions. But, how much of an impact will they have? At the heart of this question is a discussion of the potential of alternative food networks and small - scale agriculture to generate change.

AFNs, Small Scale Agriculture, and Change

Alternative food networks are fundamental to the discussion of agricultural change, with scholars debating if they represent a paradigm shift or merely a new form of expression for neoliberal[3], production-centered ideals (Goodman, 2004). Notably, almost all study participants were engaged with some sort of alternative food network. Their businesses reflect both the market driven values of the time, and deliberate choices to counter the profit-maximization, individualistic nature of modern, capitalist society. These tensions are evident in their consumer relationships, collaborative arrangements, social values and conscious practices.

Reproducing Productionist and Neoliberal Values

The productionist agricultural paradigm has a paradoxical relationship to neoliberalism (Guthman, 2008). Productionism is the ultimate expression of neoliberal values in the way in which land and water privatization, global trade, deregulation and corporate governance have shaped agriculture (Guthman, 2008; Levidow, 2015). All the while, agriculture remains heavily protected in international trade agreements (Guthman, 2008). While some credit AFNs as representing a paradigm shift through an emphasis on quality, multifunctionality and local embedding, others contend that social justice inequities and a reliance on market-based tools are, rather, complementary to productionism (Goodman, 2004; Moragues-Faus, 2017). In some ways the food networks of first generation farmers in this research reflect neoliberal and productionist values in their emphasis on consumer choice and entrepreneurial solutions (Guthman, 2008). Even as farmers complained about consumer demands and willingness to pay, they recognized the power consumers had in shaping their agricultural possibilities, and the importance of educating those consumers. Moreover, they placed an emphasis on entrepreneurial solutions—a constant reinvention of various short supply chains—to ensure not only survival, but also enable an ethical agricultural practice.

In addition, alternative food networks have been criticized for maintaining disparities of class and power (Phillips, 2006; Macias, 2008). Notably, the farmers

[3] In this section, I'll use the term neoliberalism to describe the free market paradigm in which governance increasingly shifts from state to market, global trade is liberalized, and the individual is held responsible for shaping the market, and thus society, through consumer choice. In my usage, the term represents a reliance on free market ideologies to solve social problems. I use this term, because it is employed by many of the authors that I cite in this paper to succinctly describe the phenomenon of increasingly deregulated capitalism that, they argue, results in deepening social inequities. However, I recognize that the term is morally loaded and loosely defined. For more on the use and evolution of the neoliberal concept see Venugopal (2015).

interviewed for this research were generally highly educated and from economically privileged backgrounds. Many were supporting their farms with a partners' income, off-farm jobs, or savings from past careers. A similar dynamic has been previously noted in studies on sustainable or small-scale agriculture. Pilgeram (2011) found that sustainable farmers in the Pacific Northwest have an educational and economic advantage that allows them to access flexible, well paying off farm sources of income that can subsidize their farms. Even farm training programs perpetuate these inequalities, given that low-wage apprenticeship programs are a staple of farmer training and are often only accessible to those from higher economic brackets (MacAuley & Niewolny, 2016). The economic difficulties of small-scale farming create a cycle of low pay for labor, in which farmers undervalue not only their own labor (Galt, 2013), but also that of hired or volunteer help (Pilgeram, 2011). Thus, the social inequities of alternative food networks are evident not only in consumption, but production as well.

'Doing Things Differently'

At the same time that first generation farmers reflect the hegemonic productionist and neoliberal system in which they exist, they are making a conscious choice to do things differently. They hold social and environmental values in high regard, while working to cultivate a sense of shared responsibility with consumers, exploring alternative land ownership arrangements, and contributing to a localized economy. Many of the farmers in this research are, out of necessity, experimenting with alternative land access schemes that go beyond the traditional purchase or lease, such as cooperative agreements with landowners or municipalities. Furthermore, while not all local farmers have explicit food sovereignty objectives, this process of relocalization and changing approaches to land ownership contributes to food sovereignty by shifting the power over the food supply to many small farms (Wittman, et al., 2017). This is a process that runs counter to neoliberal, productionist trends.

Their collective impact will ultimately depend on to what extent small-scale growers remain on the fringes or are able to shift the agricultural regime. Small-scale agriculture is not new, and the scientific community has long debated the small versus large question in terms of agricultural output and sustainability. In terms of food production, subsistence-level farms are responsible for nearly half of all global production (D'Souza & Ikerd, 1996), but their measured efficiency depends upon the metric used. Small farms have a lower production per unit of labor (Adamopoulis & Restuccia, 2014), but when accounting for total agricultural production and not single crop yields, small farm productivity per area can exceed that of large farms (Altieri, 2009). Small farms are also better integrated into their local communities (Mayfield, 1994), and play an important role in ensuring food sovereignty for local communities (Altieri, 2009; Wittman, et al., 2017). Consolidation and development pressures point to increasing numbers of both very small and very large farms in the future, meaning that collectively small farms will continue to play an important agricultural role.

It is impossible to predict the impact of new entrants to agriculture, but change is never tidy. Food networks and farmers are never entirely alternative or

conventional, productionist or agroecological, but identities and practices are constantly renegotiated. First generation farmers represent change, just as they perpetuate and are constrained by the productionist values of the developed economies in which they work. Regardless of the end result, this group of farmers represents a shift in the foundational values of the agricultural conversation.

Reflection on Methods

Limitations

This research followed a qualitative research design, and as such it is difficult to draw generalizations about the study population beyond the context. Due to the snowball sampling methods, the sample cannot be said to be representative of the study population of beginning, first generation farmers in the Netherlands or the U.S. However, the strategic sampling methods used, coupled with an attempt to use both organizations that cater to all farmers, as well as those specifically using sustainable methods results in the fact that between the interviews and surveys we have likely captured a range of perspectives that exist within the population.

It is important to note that this sampling method was more difficult in the Netherlands than in the United States. In Maryland, due to the researcher's former professional work, personal connections and community knowledge led to greater organizational support from both conventional and organic leaning organizations. In the Netherlands, by contrast, although both organic and conventional organizations were contacted, the organic-leaning organizations, such as the Warmonderhof, Toekomstboeren, or the Biotuinders were most proactive in distributing and promoting the research. Unfortunately, many of the larger farmer unions that cater to both conventional and organic growers, such as NAJK, the Dutch National Young Farmers Union, have policies against distributing information that does not originate with their organization. At three farmer organizations that catered to all farmers regardless of affiliation, NAJK, ZLTO and the Gelders Agrarisch Jongeren Kontakt, contacts within those organizations helped to promote the research, but on personal, rather than organizational, social media. Thus, the reason for the stronger environmental ethic and organic slant in the Netherlands than in the U.S. may simply be sampling bias rather than an actual difference between the two countries. This sampling bias is one of the most serious limitations of the research, and as a result it would be unwise to conclude that first generation farmers in the Netherlands have a stronger ecological orientation than those in the United States, despite data potentially indicating otherwise.

My language barrier and status as a cultural outsider in the Netherlands posed another potential limitation to the research. This was mitigated by distributing the survey and associated promotions over the Internet in Dutch, allowing me to reach participants in the appropriate language. Moreover, my status as a student at a well respected Dutch university likely helped lessen my perception as an outsider. The language barrier posed another potential limitation to the interviews. While an interpreter was used to ensure that farmers that do not speak English were not excluded, most interviews took place in English. Participants demonstrated a high degree of English fluency, but the interviews in Maryland and the Netherlands had

observable differences in flow and detail, likely due to language and cultural differences. While this was likely not substantial enough to alter the overall meaning of the interviews, it probably impacted the subtlety and nuance of the conversations.

In addition, I brought to this research my own bias as someone who has worked with and as a farmer. This status was both a benefit as it gave me unique insight into the study community, but also a limitation as it may have instigated a reactionary dynamic with participants tailoring their responses to what they believed I wanted to hear. In order to mitigate this, I made an effort to keep the wording of my questions open ended and neutral, letting farmers tell me what practices or values were important.

Strengths

This research is one of the few studies that offers an in-depth characterization of new entrants to agriculture. The multi-context nature of this research reveals that the shared values of new entrants to agriculture cross national borders and suggests the need for future research on this topic globally. Coupled with past results from Monller and Fuller's (2016) multi-context study on agricultural newcomers, this research begins to build evidence that the observed phenomenon of environmentally and socially conscious new agricultural entrants may be more global than local in scope. While the results are not statistically relevant or generalizable, the efforts to ensure representation from a variety of types of farmers ensure that this research captured a broad range of perspectives. In addition, the combination of semi-quantitative survey methods and semi-structured interviews facilitates the collection of information from a broad range of respondents and enables quantitative comparisons between countries. Finally, this research was guided by four broad research questions that covered all elements of new entrants farming style as well as their connectivity to one another. This was a strength in that it afforded a complex characterization of these farmers in multiple dimensions, but it was also a limitation in that time constraints made it challenging to fully explore all aspects in depth. As a result conclusions on some aspects, particularly on farmer networks and social engagement, represent a starting point for further research rather than conclusive findings.

Future Research Recommendations

This research demonstrates that new entrants to agriculture represent an emerging population of farmers that have the potential to shift agricultural paradigms. Future research should continue to explore the characteristics, challenges and needs of this population. To this end, the following research directions all merit further study:

- The influence of celebrity farmers on shaping the values and practices of new entrants (and established farmers) is a particularly interesting research question deserving of exploration.
- Moreover, research that explores alternative financing options for new entrants to agriculture to help clear the financial hurdle can offer pragmatic solutions to a key challenges.

- The entrepreneurial identity of new entrants is an area of interest both from a theoretical perspective, and to identify the business development needs of these new farmers.
- The potential influence of first generation farmers on established, productionist farmers is an intriguing research direction with implications for identity theory and agricultural transitions.
- In addition, the creative ways that new entrants are evolving and redefining alternative food networks warrant investigation. The impact of local food aggregators is particularly relevant as these computer-based systems grow in popularity.
- Finally, this research only investigated first generation farmers who had established a business recently. There is a need to study first generation farmers who exit agriculture, as well as those that build a viable farm business beyond ten years to determine the keys to success and factors leading to farm abandonment.

These research objectives above will aid in a further exploration of the potential impact of the growing network of small-scale, diversified farms represented by new entrants.

Practical Implications

If new entrants to agriculture are to succeed they will need help navigating the substantial hurdles posed by money, financing and land access. Alternative and accessible forms of financing are integral to ensure that new entrants are able to invest in their farms. Meanwhile, financial support programs that can help bridge the gap between a start up and a profitable business can ensure that new entrants succeed and that agriculture is a viable profession for people of all socioeconomic backgrounds. Interventions that help to shorten the three to five year business incubation period could be particularly helpful. To this end, the following programs have substantial potential:

- Alternative land access programs, such as community land trusts, land matching programs, agricultural easements, and municipal land use agreements are key tools in ensuring that land access is not cost prohibitive. These programs played an important role for many study participants in accessing land.
- Mentorship programs and platforms that facilitate farmer-to-farmer knowledge exchange are central to helping new entrants overcome a learning curve. This research shows that new farmers turn to networks of other farmers for knowledge. Programs that help supplement the distant information farmers receive over the Internet with in person guidance and mentorship are useful. To this end, Maryland's Beginner Farmer Training Program, in the third stage of which new farmers are matched with an experienced farm mentor, is an excellent example and one that was mentioned by several study participants. These matching programs ensure that even more naturally introverted farmers with less robust networks can seek out appropriate mentorship.

- Local produce aggregators and collective sales strategies offer an innovative strategy for helping farmers reach markets, streamlining the labor required for direct sales, and pooling resources. Examples include Maryland's Chesapeake Farm to Table, and Farm Fresh Rhode Island's Market Mobile program. These initiatives also often interface with computer technology, a set up that seems to mesh well with new entrants adoption of web-based technologies.
- Creative financing options for loans or investments can help farmers overcome initial hurdles. The USDA grant program for high tunnel investment was a commonly used program by farmers in this study. Other examples include crowd-funding platforms for loans or grants. One farmer in this study recently secured an interest free loan to purchase equipment from the non-profit Kiva, which crowdfunds micro-financing. These options are more accessible to new entrants to agriculture who may lack credentials recognized by more traditional financial institutions.

Conclusions

First generation, beginning farmers are a group of diverse individuals with a range of approaches to agriculture, from organic market gardens to conventional orchards. However, when compared to general agricultural trends, their farms are more similar to each other than they are to national averages. Collectively, the farmers in this research are enlarging a niche for small-scale, diversified, ecologically oriented agriculture, driven both by values and necessity. These farm configurations result as much from their social values and identity as business owners as from the challenges they face. They simultaneously reflect an output oriented, market driven context while quietly (and sometimes inadvertently), challenging agricultural industrialization. Demographically, they are also bringing new populations agriculture, shifting the gender balance, and introducing experience from a diverse array of past careers.

A strong business orientation unites first generation, beginning farmers across all farming styles. They do not endeavor to be hobby farmers, but hope to instead build a business that provides reliable income. This entrepeneurship is complementary, rather than counter, to their social motivations; a fact enabled by their participation in (and innovation of) alternative food networks.

They are collaborative, connected to robust networks and are enthusiastic adopters of Internet based technologies. They quickly disseminate and absorb knowledge from a growing global movement, and share techniques and innovations across state lines and national borders. In this way, they are shifting the sources of expertise from universities and consultants to farmers. This farmer to farmer exchange has the potential to shape not only their own futures, but to also influence more established farmers by raising the public profile of farm-based innovations. While these emerging farmers currently make up a small percentage of total farm output, their ecologically oriented values, practices and relations complement growing consumer demands for alternative food production. They may well wield outsized influence in agriculture due to their interconnectivity and the increasingly

blurred distinction between consumers and new producers growing up in their midsts. First generation, beginning farmers are both deliberate and accidental change-makers, with a dominant agroecological slant that can potentially shift the foundational values of agriculture.

Works Cited

Abaidoo, S., & Dickinson, H. (2002). Alternative and conventional agricultural paradigms: Evidence from farming in southwest Saskatchewan. *Rural Sociology*, *67*(1), 114-131.

Ackoff**,** S., Bahrenburg, A., & Lusher Shute, L. (2017). Building a future with farmers II: Results and recommendations for the national young farmer survey. The National Young Farmers Coalition. Retrieved from http://www.youngfarmers.org/wp-content/uploads/2017/11/NYFC-Report-2017.pdf

Adamopoulos, T.; & Restuccia, D. (2014). The size distribution of farms and international productivity differences. *American Economic Review*, *104*(6), 1667-1697.

Ahearn, M.C. (2013.a) Beginning farmers and ranchers at a glance. Washington DC: U.S. Department of Agriculture, Economic Research Service, Economic Bulletin No. 22.

Ahearn, M.C. (2013.b). Younger beginning farmers tend to operate larger farms. *Amber Waves*, 32.

Altieri, M.A. (1995). Agroecology: The science of sustainable agriculture. Intermediate Technology Publications Ltd, London, England.

Altieri**,** M. (2009). Agroecology, small farms, and food sovereignty. *Monthly Review*, *61*(3), 102-113.

Altieri, M. A., & Toledo, V. M. (2011). The agroecological revolution in Latin America: Rescuing nature, ensuring food sovereignty and empowering peasants. *Journal of Peasant Studies*, *38*(3), 587-612.

Augere- Granie, M.L. (2015). Briefing: Supporting young farmers in the EU. European Parliamentary Research Service. Retrieved from: http://www.europarl.europa.eu/RegData/etudes/BRIE/2015/559504/EPRS_BRI(2015)559504_EN.pdf

Bell, P.G., Jarnagin, M.M., & Bauer, D. (2000). Coming back across the fence: Masculinity and the transition to sustainable agriculture. *Rural sociology*, *65*(2), 215-233.

Bertoni, D., & Cavicchioli, D. (2016). Farm succession, occupational choice and farm adaptation at the rural-urban interface: The case of Italian horticultural farms, *Land Use Policy*, 57, 739-748.

Brandth, B., & Haugen, M. S. (2011). Farm diversification into tourism–Implications for social identity? *Journal of rural studies*, *27*(1), 35-44.

Burton, R. J. (2004). Seeing through the 'good farmer's' eyes: towards developing an understanding of the social symbolic value of 'productivist' behaviour. *Sociologia Ruralis*, *44*(2), 195-215.

Burton, R. J., & Wilson, G. A. (2006). Injecting social psychology theory into conceptualizations of agricultural agency: towards a post-productivist farmer self-identity? *Journal of Rural Studies*, *22*(1), 95-115.

Carlisle, L. (2016). Factors influencing farmer adoption of soil health practices in the United States: A narrative review. *Agroecology and Sustainable Food Systems*, 40(6), 583-613.

CEJA - European Council of Young Farmers. (2017). European Young Farmers Building a Sustainable Sector. Brussels, Belgium. Retrieved from http://www.ceja.eu/wp-content/uploads/2017/09/CEJA-DeLaval-Survey-European-Young-Farmers.pdf

Comer, S., Ekanem, E., Muhammad, S., Singh, S.P., & Tegegne, F. (1999). Sustainable and conventional farmers: A comparison of socio-economic characteristics, attitude, and beliefs, *Journal of Sustainable Agriculture*, *15*(1), 29-45.

Davis, D., & Carter, J. (2014). Finding common ground in weed management: Peri-urban farming, environmental and lifestyle values and practices in southeast Queensland, Australia. *The Geographical Journal*, *180*(4), 342-352.

De Lauwere, C.C. (2005). The role of agricultural entrepreneurship in Dutch agriculture of today. *Agricultural Economics*, *33*(2), 229-238.

Dewey, C. (2017, November 23). A growing number of young Americans are leaving desk jobs to farm. *The Washington Post.* Retrieved from https://www.washingtonpost.com/business/economy/a-growing-number-of-young-americans-are-leaving-desk-jobs-to-farm/2017/11/23/e3c018ae-c64e-11e7-afe9-4f60b5a6c4a0_story.html?utm_term=.7f58114f6e1f

D'Souza, G., & Ikerd, J. (1996). Small farms and sustainable development: Is small more sustainable? *Journal of Agricultural and Applied Economics*, *28*(1), 73-83.

Dunmont, A.M., Vanloqueren, G., Stassart, P.M., & Baret, P.V. (2016). Clarifying the socioeconomic dimensions of agroecology: Between principles and practice. *Agroecology and Sustainable Food Systems*, *40*(1), 24-47.

Dyball, R. (2015). From Industrial Production to Biosensitivity: The need for a food system paradigm shift. *Journal of Environmental Studies and Science, 5*(4), 560-572.

ERS – Economic Research Service of the United Stated Department of Agriculture. (2016). *Cash Receipts by State* [data file]. Retrieved from https://data.ers.usda.gov/reports.aspx?ID=17843#P13dd2b3b57314654b62778e59740392c_2_17iT0R0x20

Ekers, M., Levkoe, C.Z., Walker, S., & Dale, B. (2015). Will work for food: Agricultural interns, apprentices, volunteers and the agrarian question. *Agriculture and Human Values*, *33*(3), 705-720.

Eurostat - Statistical Offices of European Communities. (2012). *Agriculture Census in the Netherlands*. Retrieved from http://ec.europa.eu/eurostat/statistics-explained/index.php/Agricultural_census_in_the_Netherlands

Everett, S. (2012). Production places or consumption spaces? The placemaking agency of food tourism in Ireland and Scotland. *Tourism Geographies*, *14*(4), 535-554.

Fortier, J.M. (2014). *The market gardener: A successful grower's handbook for small-scale organic farming.* Gabriola Island, Canada: New Society Publishers.

Frohlich, T.C., & Kent, A. (2015, July 7). What US land is really worth state by state. *MSN.com*. Retrieved from https://www.msn.com/en-us/money/generalmoney/what-us-land-is-really-worth-state-by-state/ar-BBkTfZS#image=BBkGo1K|44.

Frost, J. (2016). J.M. Fortier and the rise of the high-profit microfarm. *Modern Farmer.* Retrieved from: https://modernfarmer.com/2016/10/jm-fortier/

Galt, R. E. (2013). The moral economy is a double-edged sword: explaining farmers' earnings and self-exploitation in community-supported agriculture. *Economic Geography*, *89*(4), 341-365.

Goodman, D. (2004). Rural Europe redux? Reflections on alternative agro-food networks and paradigm change. *Sociologia ruralis*, *44*(1), 3-16.

Gray, B.J.; & Gibson, J.W. (2013). Actor-networks, farmer decisions and identity. *Journal of Culture, Agriculture, Food and Environment*, *35*(2), 82-101.

Groth, T. M., Curtis, A., Mendham, E., & Toman, E. (2014). Farmer identity in multifunctional landscapes: using a collective identity construct to explore the nature and impact of occupational identity. *Australian Geographer*, *45*(1), 71-86.

Guthman, J. (2008). Neoliberalism and the making of food politics in California. *Geoforum, 39*(3), 1171-1183.

Herndl, C. G., Goodwin, J., Honeycutt, L., Wilson, G., Graham, S. S., & Niedergeses, D. (2011). Talking sustainability: Identification and division in an Iowa community. *Journal of Sustainable Agriculture*, *35*(4), 436-461.

Hinrichs, C.C. (2000). Embeddedness and local food systems: Notes on two types of direct agricultural market. *Journal of Rural Studies, 16,* 295-303.

Holmes, J. (2006). Impulses towards a multifunctional transition in rural Australia: Gaps in the research agenda. *Journal of rural studies*, *22*(2), 142-160.

Horrigan, L., Lawrence, R., & Walker, P. (2002). How sustainable agriculture can address the environmental and human health harms of industrial agriculture. *Environmental Health Perspectives*, *110*(5), 445-456.

Howden, P., & Vanclay, F. (2000). Mythologization of farming styles in Australian broadacre cropping. *Rural Sociology*, *65*(2), 295-310.

Huttunen, S., & Peltomaa, J. (2016). Agri-environmental policies and 'good farming' in cultivation practices at Finnish farms. *Journal of Rural Studies*, *44*, 217-226.

Inwood, S.; Clark, J.K.; & Bean, M. (2013). The differing values of multi-generation and first-generation farmers: Their influence on the structure of agriculture at the rural-urban interface. *Rural Sociology*, *78*(3), 346-370.

Katchova, A. L., & Ahearn, M. C. (2015). Dynamics of farmland ownership and leasing: Implications for young and beginning farmers. *Applied Economic Perspectives and Policy*, *38*(2), 334-350.

Kielbasa, B. (2016). Driving and limiting factors in the farm management by young farmers in the context of survey research. *Journal of Agribusiness and Rural Development*, *01*(39), 79-86.

Lang, T., & Heasman, M. (2015). *Food wars: The global battle for mouths, minds and markets*. Routledge.

Lasley, P. (2005). All in the family: The decision to take up farming. Proceedings from: *Agricultural Outlook Forum*. Arlington, VA: United States Department of Agriculture.

Levidow, L. (2015). European transitions towards a corporate-environmental food regime: Agroecological incorporation or contestation? *Journal of Rural Studies*, *40*, 76-89.

Lobley, M., Butler, A., & Reed, M. (2009). The contribution of organic farming to rural development: An exploration of the socio-economic linkages of organic and non-organic farms in England. *Land Use Policy*, *26*(3), 723-735.

Lowder, S. K., Skoet, J., & Raney, T. (2016). The number, size, and distribution of farms, smallholder farms, and family farms worldwide. *World Development*, *87*, 16-29.

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.

Macias, T. (2008). Working towards a just, equitable, and local food system: The social impact of community-based agriculture. *Social Science Quarterly*, *89*(5), 1086-1101.

Mailfert, K. (2007). New farmers and networks: How beginning farmers build social connections in France. *Tijdschrift voor economische en sociale geografie*, *98*(1), 21-31.

Marsden, T. (2013). Sustainable place-making for sustainability science: The contested case of agri-food and urban–rural relations. *Sustainability science*, *8*(2), 213-226.

Masterson, K. (2011, March 30). US sees more female farmers cropping up. *National Public Radio.* Retrieved from https://www.npr.org/2011/03/30/134979252/u-s-sees-more-female-farmers-cropping-up

Mayfield, L.H. (1994). The local economic impact of small farms: A spatial analysis. *Journal of Economic and Social Geography*, *87*(5), 387-398.

McGuire**,** J.M.; Morton, L.W.; Arbuckle, J.G., & Cast, A.D. (2015). Farmer identities and response to the social-biophysical environment. *Journal of Rural Studies*, *39*, 145-155

McGuire, J., Morton, L. W., & Cast, A. D. (2013). Reconstructing the good farmer identity: Shifts in farmer identities and farm management practices to improve water quality. *Agriculture and Human Values*, *30*(1), 57-69.

Methorst, R. (2016). *Farmers' perception of opportunities for farm development* (Doctoral Thesis). Wageningen University, Wageningen, The Netherlands. Retrieved from http://edepot.wur.nl/391066

Mishra, A.; Wilson, C., Williams, R. (2009) Factors affecting financial performance of new and beginning farmers, *Agricultural Finance Review*, 69 (2), 160-179.

Monller i Rico, N., & Fuller, A. M. (2016). Newcomers to farming: towards a new rurality in Europe. *Documents d'Anàlisi Geogràfica*, *62*(3), 531-551.

Moragues-Faus, A. (2017). Emancipatory or neoliberal food politics? Exploring the "politics of collectivity" of buying groups in the search for egalitarian food democracies. *Antipode*, *49*(2), 455-476.

Morel, K.; Cristobal, M.S.; Leger, F.G. (2017). Small can be beautiful for organic market gardens: An exploration of the economic viability of French microfarms using MERLIN. *Agricultural Systems*, *158*, 39-49.

NASS - National Agriculture Statistics Service (2015). *Land Values 2015 Summary*. [data file]. Retrieved from https://www.usda.gov/nass/PUBS/TODAYRPT/land0815.pdf

Niewolny, K.L., & Lillard, P.T. (2010). Expanding the boundaries of beginning farmer training and program development: A review of contemporary initiatives to cultivate a new generation of American farmers. *Journal of Agriculture, Food Systems, and Community Development*, *1*(1), 65-88.

Padel, S. (2001). Conversion to organic farming: A typical example of the diffusion of an innovation? *Sociologia ruralis*, *41*(1), 40-61.

Phillipov, M.,& Goodman, M.K. (2017). The celebrification of farmers: celebrity and the new politics of farming. *Celebrity Studies*, *8*(2), 346-350

Phillips, L. (2006). Food and globalization. *Annual Review of Anthropology, 35*, 37-57.

Piet, L. (2016). Recent trends in the distribution of farm sizes in the EU. In *149th Seminar, October 27-28, 2016, Rennes, France* (No. 245075). European Association of Agricultural Economists.

Pilgeram, R. (2011). The only thing that isn't sustainable is the farmer: Social sustainability and the politics of class among pacific northwest farmers engaged in sustainable farming. *Rural Sociology*, *76*(3), 375-393.

Pinto-Correia, T., Gonzalez, C., Sutherland, L. A., & Peneva, M. (2014). Lifestyle farming: Countryside consumption and transition towards new farming models. In L.A. Sutherland, I. Darnhofer, G. Wilson & L. Zagata (Eds.), *Transition Pathways towards Sustainability in Agriculture: Case Studies from Europe (67-77)*. CABI.

Rantamäki-Lahtinen, L., & Väre, M. K. (2012). Strategic objectives and development plans of beginning farmers. *Agricultural and Food Science*, *21*(4), 430-439.

Rockstrom, J., Williams, J., Daily, G., Nobel, A., Matthews, N., Gordon, L., Wetterstrand, H., DeClerck, F., Shah, M., Steduto, P., Fraiture, C., Hatibu, N., Unver, O., Bird, J., Sibanda, L., & Smith, J. (2016). Sustainable intensification of agriculture for human prosperity and global sustainability. *Ambio*, 1-14.

Riley, M. (2016). Still being the 'good farmer': (Non-) retirement and the preservation of farming identities in older age. *Sociologia ruralis*, *56*(1), 96-115.

Roe, B. E. (2015). The risk attitudes of US farmers. *Applied Economic Perspectives and Policy*, *37*(4), 553-574.

Sonnino, R., & Marsden, T. (2006). Beyond the divide: Rethinking relationships between alternative and conventional food networks in Europe. *Journal of Economic Geography, 6*(2), 181-199.

Stryker, S., & Burke, P. J. (2000). The past, present, and future of an identity theory. *Social psychology quarterly*, 284-297.

Sukkel, W., & Hommes, M. (2009). Research on organic agriculture in the Netherlands. Wageningen University and Research and The Louis Bolk Institute. Retrieved from http://www.louisbolk.org/downloads/2338.pdf

Sutherland, L.A. (2013). Can organic farmers be good farmers? Adding the taste of necessity to the conventionalization debate. *Agriculture and Human Values*, *30*(3), 429-441.

Taylor, R., & Koo, W.W. (2013). *Beginning Farmers: Barriers and Possibilities* (No. 207940). North Dakota State University, Center for Agricultural Policy and Trade Studies.

Tilman, D., Cassman, K.G., Matson, P.A., Naylor, R., Polasky, S. (2002). Agricultural sustainability and intensive production practices. *Nature*, 418, 671-677.

Trost, J. E. (1986). Statistically non-representative stratified sampling: A sampling technique for qualitative studies. *Qualitative sociology*, *9*(1), 54-57.

USDA - United States Department of Agriculture (2007). *Agricultural Census, Median Farm Size* [data file]. Retrieved from https://www.agcensus.usda.gov/Publications/2007/Online_Highlights/Custom_Summaries/Median_Farm_Size.pdf

USDA - United States Department of Agriculture. (2012). *2012 Census Volume 1, Chapter 2: State Level Data* [data file]. Retrieved from https://www.agcensus.usda.gov/Publications/2012/Full_Report/Volume_1,_Chapter_2_US_State_Level/

USDA - United States Department of Agriculture. (2014). *Organic Survey*. Retrieved from https://www.agcensus.usda.gov/Publications/2012/Online_Resources/Organics/index.php

USDA - United States Department of Agriculture. (2015). *Local Food Marketing Practices Survey*. Retrieved from https://www.agcensus.usda.gov/Publications/2012/Online_Resources/Local_Food/

Van Averbeke, W., & Mohamed, S.S. (2006). Smallholder farming styles and development policy in South Africa: The case of Dzindi Irrigation Scheme. *Agrekon, 45*(2), 136–157.

Vanclay, F., Howden, P., Mesiti, L., & Glyde, S. (2006). The social and intellectual construction of farming styles: Testing Dutch ideas in Australian agriculture. *Sociologia Ruralis*, *46*(1), 61-82.

Van der Ploeg**,** J.D. (2006)**.** Agricultural production in crisis. In: P. Cloke, T. Marsden, & P. Mooney (Eds.), *Handbook of Rural Studies*. Sage Publications.

Van der Ploeg, J.D. (2010). The peasantries of the twenty-first century: the commoditisation debate revisited. *The Journal of Peasant Studies*, *37*(1), 1-30.

Van der Ploeg, J. D. (2014). Peasant-driven agricultural growth and food sovereignty. *Journal of Peasant Studies*, *41*(6), 999-1030.

Van der Ploeg, J. D., Laurent, C., Blondeau, F., & Bonnafous, P. (2009). Farm diversity, classification schemes and multifunctionality. *Journal of environmental management*, *90*, S124-S131.

Van der Ploeg, J.D., & Roep, D. (2003). Multifunctionality and rural development: the actual situation in Europe. In: G. van Huylenbroeck & G. Durand (Eds.), *Multifunctional Agriculture; A new paradigm for European Agriculture and Rural Development* (37-53)*.* Hampshire, England: Ashgate.

Van Passel, S., Nevens, F., Mathijs, E., & Van Huylenbroeck, G. (2007). Measuring farm sustainability and explaining differences in sustainable efficiency. *Ecological economics*, *62*(1), 149-161.

Vanslembrouck, I., Van Huylenbroeck, G., Verbeke, W. (2002). Determinants of the willingness of Belgian farmers to participate in agri-environmental measures. *Journal of Agricultural Economics,* 53, 489-511.

Vesala, K.M., Peura, J., McElwee, G. (2007). The split entrepreneurial identity of the farmer. *Journal of Small Business and Enterprise Development*, *14*(1), 48-63.

Venugopal, R. (2015). Neoliberalism as a concept. *Economy and Society, 44*(2), 165-187.

Verbeek, J. (2017, April 11). Veel interesse voor agrarische grond. Het Financieele Dagblad. Retrieved from https://fd.nl/ondernemen/1196500/veel-interesse-voor-agrarische-grond

Vijn, M., Bremmer, B., Hassink, J., & Schoutsen, M. (2011). *Nieuwe intreders in de multifunctionele landbouw*. Wageningen University, Foundation for Agricultural Research.

Viviano, F. (2017). This tiny country feeds the world. National Geographic. Retrieved from https://www.nationalgeographic.com/magazine/2017/09/holland-agriculture-sustainable-farming/

Warren, C. R., Burton, R., Buchanan, O., & Birnie, R. V. (2016). Limited adoption of short rotation coppice: The role of farmers' socio-cultural identity in influencing practice. *Journal of Rural Studies*, *45*, 175-183.

Williamson, J. M. (2017). Following beginning farm income and wealth over time: A cohort analysis using ARMS. *Agricultural Finance Review*, *77*(1), 22-36.

Wilson, A. D. (2013). Beyond alternative: Exploring the potential for autonomous food spaces. *Antipode*, *45*(3), 719-737.

Wittman, H., Dennis, J., & H. Pritchard. (2017). Beyond the market? New agrarianism and cooperative farmland access in North America. *Journal of Rural Studies*, *53*, 303-316.

Wood, B.A., Blair, H.T., Gray, D.I., Kemp, P.D., Kenyon, P.R., Morris, S.T., & Sewell, A.M. (2014). Agricultural science in the wild: A social network analysis of farmer knowledge exchange. *PLOS One, 9*(8).

Yamamoto, D., & Engelsted, A.K. (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.

Zagata, L., & Sutherland, L. (2015). Deconstructing the 'young farmer problem in Europe': Towards a research agenda, *Journal of Rural Studies*, *38*, 39-51.

Appendix 1: Partner Organizations

The following table displays the names, actions and affiliation of the organizations that were recruited to assist in survey promotion and distribution.

Organization Name	Organization Description	Caters to all farmers	Caters specifically to sustainable farmers	Action
U.S. Organizations				
Baltimore Farm Network	Informal email list for sharing information	x		Researcher sent survey recruitment email
CASA Beginning Farmer Training Program	Training program for beginning farmers run by the Chesapeake Association for Sustainable Agriculture		x	Organizational contacts shared with trainees via email.
Centro Ashe	Small farm business that runs herbal education programs.	na	na	None. No response
Chesapeake Association for Sustainable Agriculture (CASA)	Membership based organization dedicated to promoting regional, sustainable agriculture. They run many educational programs for farmers		x	Organizational contacts posted survey on online bulletin
Chesapeake Craft	An informal organization that operates educational farm visits for farmers	x		None. They responded, but never posted the message on Facebook.
COMFOOD	Nationwide food systems email list with thousands of subscribers		x	Researcher sent survey recruitment email
Farm Alliance of Baltimore City	A non-profit organization fostering cooperation among Baltimore City urban farms	x		A farmer member forwarded research information to all other members via email. He sent both an initial request and a reminder several weeks later.

FRESHFARM Markets	A 501c3 non profit organization that operates farmers markets in Maryland, DC and Virginia with a network of over 100 farmers	x		Organizational contacts forwarded research information to all farmers, and included a link to the survey in enews letter.
LEAD Maryland	This professional development program of the University of Maryland caters to farmers and others working in agriculture. Each year they have a class of approximately 20 fellows	x		Organizational contacts agreed to forward information to previous classes of fellows
Marbidco	Semi-private organization that offers financing to farmers in Maryland	x		No response.
Maryland Department of Agriculture, Maryland Best Program	This program focuses on promoting locally grown products	x		No response.
Maryland Farm Bureau	The Maryland chapter of a national farmers union	x		No response.
Maryland Farmers Market Association	A non profit organization dedicating to promoting Maryland's farmers markets	x		Organizational contacts recommended 20 specific farmers to contact, and forwarded information to their networks via email.
Maryland FarmLink, a program of Southern Maryland Agriculture Development Commission	This program focuses on connecting farmers with land access opportunities, information and equipment	x		Posted a message on their online forum and included a link in newsletter with 2000 subscribers
Maryland Grazers Network	A mentorship program for farmers grazing livestock	x		No response.
MD Young Farmers Coalition	Young Farmer organization	x		Organizational contacts agreed to "help spread the word"

Montgomery County Office of Agriculture, New Farmer Program	County run initiative to match new farmers with land and mentors	x		Organizational contacts forwarded research information to all farmers currently enrolled in program, and recommended a list of farmers to contact
Pennsylvania Veteran Farming Project	Organization assisting veterans in agriculture	x		They initiated contact and promised to help spread the word
Southern Maryland Agricultural Development Commission	Regional organization dedicated to improving viability of agriculture in region.	x		Organizational contacts agreed to share with farming groups
University of Maryland Extension, Beginning Farmers Program	This program provides information to beginning farmers	x		Organizational contacts included information in an eblast and a facebook post.
University of Maryland, individual county offices	General county offices for several Maryland counties	x		No response.
Netherlands Organizations				
BD Jong	Online community of young, biodynamic farmers		x	They forwarded the survey and posted about the research on the Facebook page, twice
Boerengroep	Farmer foundation associated with Wageningen University		x	They posted a notice about the research on Facebook, their website and in their enewsletter multiple times
City Plot	Urban Agriculture organization in Amsterdam			They suggested a few urban growers to contact
De Biotuinders	An association of organic-oriented market gardeners		x	They forwarded research information to 35 members
de Streekboer	An online collective marketing platform for farmers in Frisland	x		No response
Future Farmers in the Spotlight	A film project documenting beginning farmers throughout Europe			No response

Gelders Agrarisch Jongeren Kontakt	Gelderland young farmers union	x		They have policies against distributing information on their email list, but a contact offered to post information on personal Twitter
Gemeenschapslandbouw/ CSA Nederland en Vlaanderen Facebook Group	Online community of CSA farmers in the Netherlands and Flanders	x		Researcher joined the group and posted a notice twice on the Facebook page
KLV Wageningen Alumni Network	Alumni Network of Wageningen University	na	na	Researcher posted on Facebook page
LandCo	Consulting firm focusing on organic agriculture		x	Included research information in an e newsletter.
NAJK	The national Dutch young farmers union	x		They have a policy against distributing material to their subscribers, but a board member posted information on his personal Facebook and Twitter page
RSO - Wageningen	Rural Sociology Chair Group at Wageningen University	na	na	They shared research information on blog and Facebook
Toekomstboeren	An association of future farmers in the Netherlands		x	They posted research information on website and Facebook multiple times.
Van Akker Naar Bos	Consulting firm dedicated to promoting natural agriculture		x	They agreed to post on social media
Wageningen Student Plaza	online community of Wageningen students	na	na	Researcher posted on Facebook page
Warmonderhof	Training school for biodynamic agriculture		x	Research information sent to alumni database twice
WWOOF Netherlands	The Dutch chapter of an international organization connecting volunteers with farmers		x	No response
ZLTO	An association of 15,000 farmers in Zeeland, Noord-Brabant and Zuid-Gelderland	x		An organizational contact forwarded research information to a few individual farmers

Appendix 2: Survey Questions (English)

The following is the full version of the online survey, beginning with the informed consent letter, as it appeared on Qualtrics.

Start of Block: INTRODUCTION

Thank you for your interest!

This survey is a component of research for my master's thesis at Wageningen University in the Netherlands. I am researching motivations, values and practices among beginning, first generation farmers in the country of the Netherlands and the U.S. mid-Atlantic region. Data from this survey will be collected, stored and reported anonymously.

This survey will take approximately 20 minutes to complete, and will include questions on farm characteristics, farmer networks and values and practices. You will be asked to provide contact information only if you are interested in winning an Amazon gift card, or being contacted for a follow-up interview. If you choose to leave your contact information for an interview, we may discuss your responses in the interview, but all reporting will remain anonymous. At no time will your individual responses be discussed with any other research participant.

Your participation is entirely voluntary; you may exit the survey at any time, or skip any questions you wish. By clicking agree below, you indicate that you consent to voluntarily participate in this survey. Your participation will help increase understanding of beginning, first generation farmers.

If you have any questions or concerns about this research, please contact me at laura.genello@wur.nl.

Q72 Please select one:

- ○ Agree and Continue (1)
- ○ Exit Survey (2)

LOGIC: If select "agree and continue," move to Q74. If select "Exit Survey" move to end of survey. Respondents must select one answer to continue.

Q74 Please note, we are looking for participants who meet the following criteria:

- You have approximately 10 years or less of farm management experience.
- You have a decision making role on a farm
- You are a first generation farmer, (you did not take over an existing farm from a family member).

We ask for only one response per farm.

End of Block: INTRODUCTION

Start of Block: SECTION 1

SECTION 1

Q67: Can you confirm which country you are in?

- ○ United States (1)
- ○ Netherlands (2)

Q2: How large is your farm (in acres)? [Dutch translation requested reporting in hectares]

- ○ Owned (1) _____
- ○ Leased/Rented (2) _____
- ○ Other (3) _____

Q3: How many total acres were in production last year? _____

Q4: Where is your farm located?

- ○ County (1) _____

Logic: If Q67 response = United States, display option below.

- ○ State (2) _____

Q5: What products did your farm produce in the last year? [*check all that apply*]

- ☐ Annual produce and/or fruit (1)
- ☐ Perennial produce and/or fruit (2)
- ☐ Dairy: cows (4)
- ☐ Dairy: goats (5)
- ☐ Dairy: sheep (6)
- ☐ Meat: cows (8)
- ☐ Meat: chickens (9)
- ☐ Meat: sheep/lamb (10)
- ☐ Meat: other (12)
- ☐ Eggs: chicken (14)
- ☐ Eggs: other (15)
- ☐ Fish/ Aquaculture (16)
- ☐ Grains/Cereals for human consumption (17)
- ☐ Animal Feed (18)
- ☐ Herbs and/or edible flowers (19)
- ☐ Ornamental Flowers (20)
- ☐ Nursery crops (seedlings, potted plants) (21)
- ☐ Mushrooms (22)
- ☐ Forest Products (timber, maple syrup) (23)

☐ Honey/bee products (24)

☐ Value-added products (e.g. jams, soaps, etc.) (25)

☐ Other. Please fill in: (26) _____

Q6: Out of all those you selected in the list above, please rank the top 3 most important products by volume, 1 being the most produced.

LOGIC: Survey displays only those answers which were checked in the previous question. Text filled in by respondent for other will be displayed as an option.

Q7: What is the approximate number of distinct products that you produce*? Include types of vegetables such as peppers and tomatoes as distinct products, but do not include varieties within a crop (e.g. Sungold vs. Cherokee Purple tomatoes).*

○ less than 10 (1)

○ 10-20 (2)

○ 21-30 (3)

○ more than 30 (4)

Q8: How do you sell your products? *Check all that apply*.

☐ Direct to consumer (e.g. CSA, farmers market, box scheme, farm stand). (1)

☐ Direct to restaurant (2)

☐ Direct to retail location (3)

☐ Through a cooperative (4)

☐ To a distributor (5)

☐ To a processor (6)

☐ Other (7) _____

Q9: Rank the top three most important sales outlets by farm income, where 1 is the most important.

LOGIC: Survey displays only those answers which were checked in the previous question. Text filled in by respondent for other will be displayed as an option.

Q10 Does your farm business earn income from activities beyond the sale of agricultural goods (e.g. education, agritourism, etc.)?

- ○ Yes (1)
- ○ No (2)

Display This Question:

If Q10 = Yes

Q11 Approximately what percentage of your farm income comes from these sources.

- ○ less than 25% (1)
- ○ 25-50% (2)
- ○ 51-75% (3)
- ○ more than 75% (4)

Q12 Does your household have off-farm sources of income (e.g. second jobs, spouse's income, etc.)?

- ○ Yes (1)
- ○ No (2)

Display This Question:

If Q12= Yes

Q13 Approximately what percentage of your household income comes from an off-farm source?

- ○ less than 25% (1)
- ○ 25-50% (2)
- ○ 51-75% (3)
- ○ more than 75% (4)

Q14: Please check all of the following that apply to your farm.

- ☐ GAP certified (1)
- ☐ Certified organic (2)
- ☐ Certified biodynamic (3)
- ☐ Organic practices, not certified (4)
- ☐ Biodynamic practices, not certified (5)
- ☐ Certified naturally grown (6) [LOGIC: display only this answer to respondents who selected United States for Q67]
- ☐ Animal Welfare Approved (7)
- ☐ Soil-less production (hydroponic, aquaponics, etc.) (8)
- ☐ None of the above (9)

Q15: How old are you? _____

Q16: Check the box that best describes your role on this farm.

- ○ Principle decision maker/manager (1)
- ○ Co-manager/ decision maker (2)
- ○ Manager/decision maker responsible for a subset of farm activities. Please describe (3) _____

- ○ Apprentice, intern or employee (4)
- ○ Other. Please describe. (5) _____

Q17: How long have you been in this role at this farm?_____
Q18: Approximately how many years of total farming experience do you have?_____

Q19: What is your gender identity?

- ○ Female (1)
- ○ Male (2)
- ○ Other (3) _____
- ○ Prefer not to answer (4)

LOGIC: Display This Question only to respondents who selected "United States" for Q67

Q20: How would you describe your race or ethnicity?
Why do we ask? This survey data helps us to better understand the population of beginning, first generation farmers so that we can select respondents for in-depth interviews who are representative of that population. Data on ethnic origin will not be correlated with other factors in analysis, and will be kept anonymous. Please feel free to skip this question if you are not comfortable answering.

- ○ Prefer not to answer (1)
- ○ Please describe (2) _____

LOGIC: Display This Question only to respondents who selected "Netherlands" for Q67.

Q75: Do you belong to an ethnic minority group in the Netherlands?

Why do we ask? This survey data helps us to better understand the population of beginning, first generation farmers so that we can select respondents for in-depth interviews who are representative of that population. Data on ethnic origin will not be correlated with other factors in analysis, and will be kept anonymous. Please feel free to skip this question if you are not comfortable answering.

- ○ Prefer not to answer (1)
- ○ Yes (2) _____
- ○ No (3)

End of Block: SECTION 1

Start of Block: SECTION 2: NETWORK

Q21 *SECTION 2*

The following questions will ask about your farm's network.

Q22: Approximately how many other farmers do you personally know?

- ○ less than 10 (1)
- ○ 10-25 (2)
- ○ 26-40 (3)
- ○ more than 40 (4)

Q23: Of the total number of farmers that you know, approximately what percentage shares most of your values regarding farming?

- ○ less than 25% (1)
- ○ 26-50% (2)
- ○ 51-75% (3)
- ○ more than 75% (4)

LOGIC: Display This Question only to respondents who selected "United States" for Q67

Q24: Please select every region in which you personally know a farmer. [Question includes picture of map showing regions]

- ☐ {Logic: display state from Q4} (1)
- ☐ Other mid-atlantic state (2)
- ☐ Northeast (3)
- ☐ Southeast (4)
- ☐ Mideast (5)
- ☐ South midwest (6)
- ☐ Midwest (7)
- ☐ Rocky mountain (8)

- [ ] Southwest (9)
- [ ] Pacific northwest (10)
- [ ] Alaska or Hawaii (11)
- [ ] International (12)

LOGIC: Display This Question only to respondents who selected "Netherlands" for Q67

Q68 Please select every region in which you personally know a farmer. [Question includes picture of map showing regions]

- [ ] {Logic: Display province from Q4} (1)
- [ ] Other Dutch province (2)
- [ ] Other Western European Country (3)
- [ ] Eastern Europe (4)
- [ ] Northern Europe (5)
- [ ] Southern Europe (6)
- [ ] Other International (7)

Q25: How frequently do you typically interact with other farmers (beyond those working on your farm)?

- ○ One or more times per week (1)
- ○ One to three times per month (2)
- ○ Once or twice every few months (3)
- ○ A couple times a year (4)
- ○ Almost never (5)

Q26: Please check all of the reasons why you interact with other farmers.

- ☐ Socializing (1)
- ☐ Shared markets (e.g. sell at the same farmers market) (2)
- ☐ Sharing tools and equipment (3)
- ☐ Seeking advice (4)
- ☐ Giving advice (5)
- ☐ Exchanging labor (6)
- ☐ Purchasing or selling product or services (7)
- ☐ Learning from what others are doing (8)
- ☐ Collective organizing (cooperatives, etc.) (9)
- ☐ Political activities (10)
- ☐ Other. Please fill in (11) _____

Q27: Out of your selections above, please rank the top 3 most important reasons why you interact with other farmers.

LOGIC: Survey displays only those answers that were checked in the previous question. Text filled in by respondent for other will be displayed as an option.

We are also interested in your connections with organizations that you believe are somehow related to your farm, food, or agriculture. Organizations include government organizations, unions, non-profits, businesses, and informal collective networks. Connections take many forms including:

- *Paid memberships*
- *Board positions*
- *Subscription to email lists*
- *Attendance of events or meetings*
- *Business transactions*
- *Social media connections (organizations liked on Facebook or followed on Twitter)*

Q29: Why do you maintain organizational connections? Please check all that apply.

- ☐ Business transactions (suppliers, customers) (1)
- ☐ Customized consultancy or technical assistance (2)
- ☐ Access to or sharing of information (3)
- ☐ Funding opportunities (4)
- ☐ Information about policy developments (5)
- ☐ Advocacy for policy positions (6)
- ☐ Networking (7)
- ☐ Collective organizing (cooperative marketing, etc) (8)
- ☐ Keeping in touch with fellow business owners/farmers (9)
- ☐ Other. Please describe (10) _____
- ☐ No organizational connections (11)

LOGIC: The following question is shown only to respondents that did not check "no organizational connections" above.

Q30 Please rank the top 3 most important reasons why you maintain organizational connections, 1 being the most important.

LOGIC: Survey displays only those answers that were checked in the previous question. Text filled in by respondent for other will be displayed as an option.

LOGIC: The following questions (Q32-Q34) are shown only to respondents that did not check "no organizational connections" above.

You may find it helpful to reference your email and social media accounts while answering the next three questions.

Q32: In the past year, approximately how many organizations have you had contact with?

- ○ less than 5 (1)
- ○ 5-9 (2)
- ○ 10-19 (3)
- ○ 20-29 (4)
- ○ 30 or over (5)

Q33: Please list the approximate number of organizations in each category that you have been connected to in the past year:

- ○ Government organizations (1) _____
- ○ Universities (including university extension services) (2) _____
- ○ Non-profits (3) _____
- ○ Business that are suppliers or customers (4) _____
- ○ Other businesses (e.g. consulting firms, etc) (5) _____
- ○ Other (6) _____

Q34: Please list the approximate number of organizations in each geographic category that you have been connected to in the past year:

- ○ Local organizations (1) _____
- ○ Regional organizations (2) _____
- ○ National organizations (3) _____
- ○ International organizations (4) _____

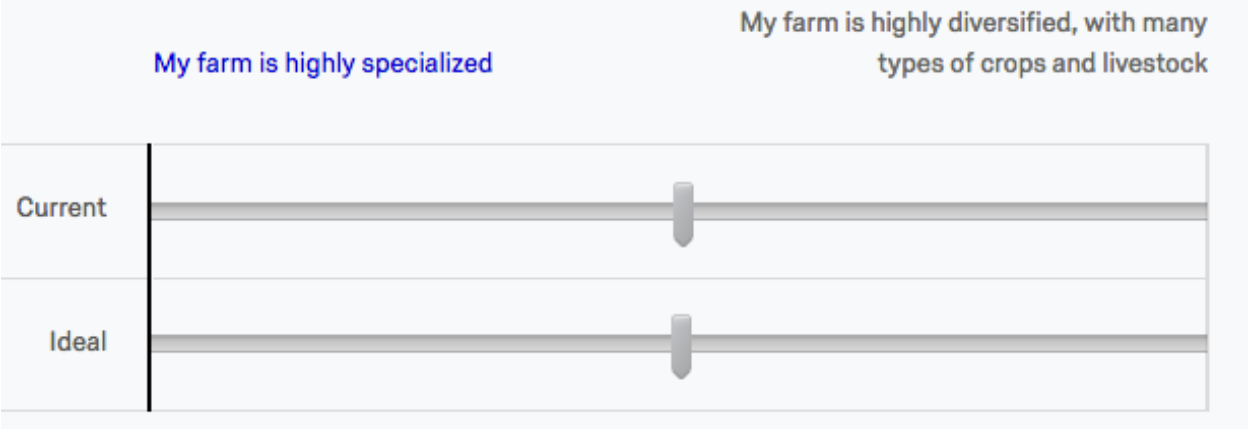
End of Block: SECTION 2: NETWORK

Start of Block: SECTION 3

Q35 *SECTION 3:*

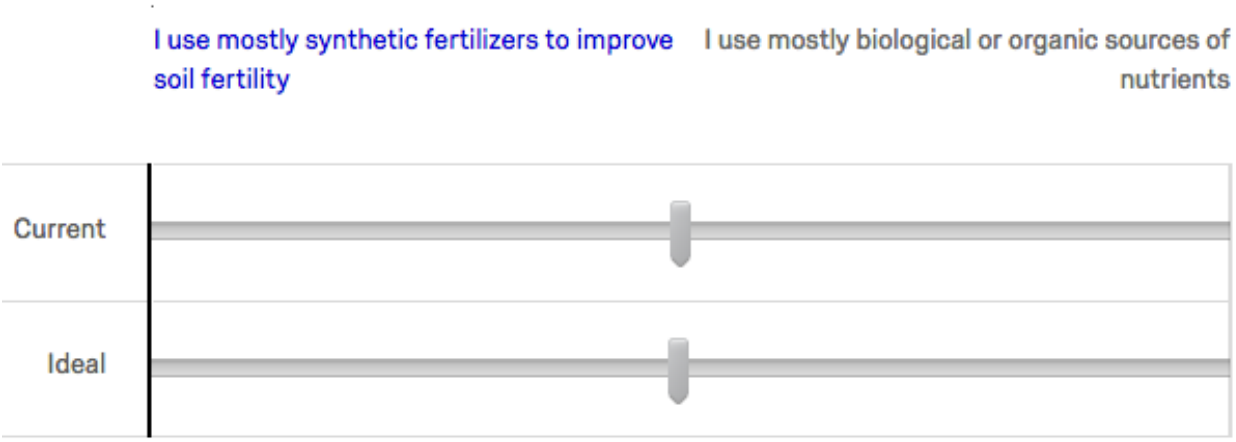
Each of the following questions asks you to position a slider between two statements. Move the first slider to the position that best represents your current farm practices. Move the second slider to where you would ideally like your practices to be if not limited by financial or labor constraints. It may be easier to complete these questions on a larger screen. If using a mobile device, we recommend rotating the device to a horizontal layout. We apologize for any formatting issues. Note, in order for your data to be recorded, you must tap each slider bar even if you do not wish to adjust its position.

Q36: Farm diversification

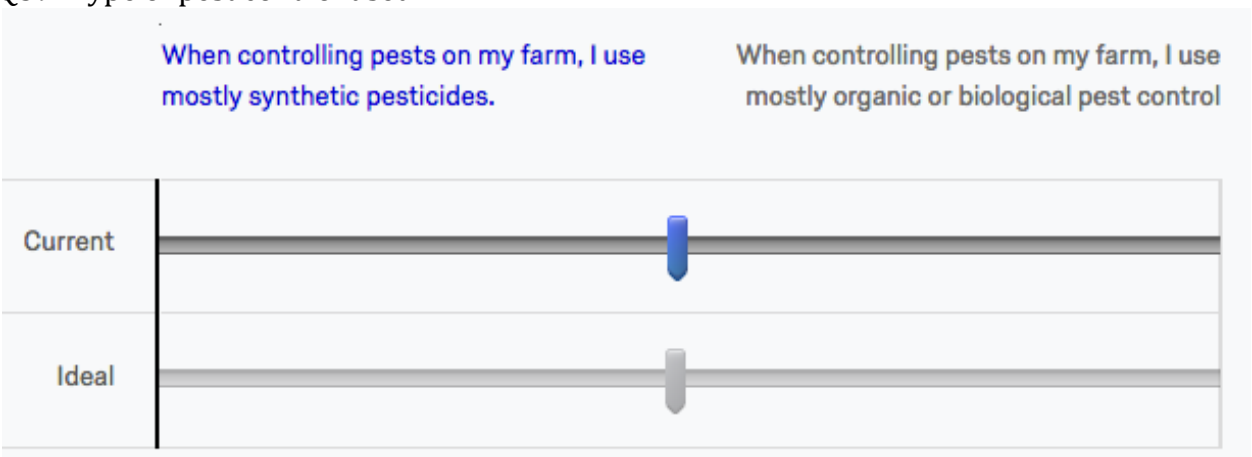


Q37: Farm outputs

Q38: Type of fertilizers used

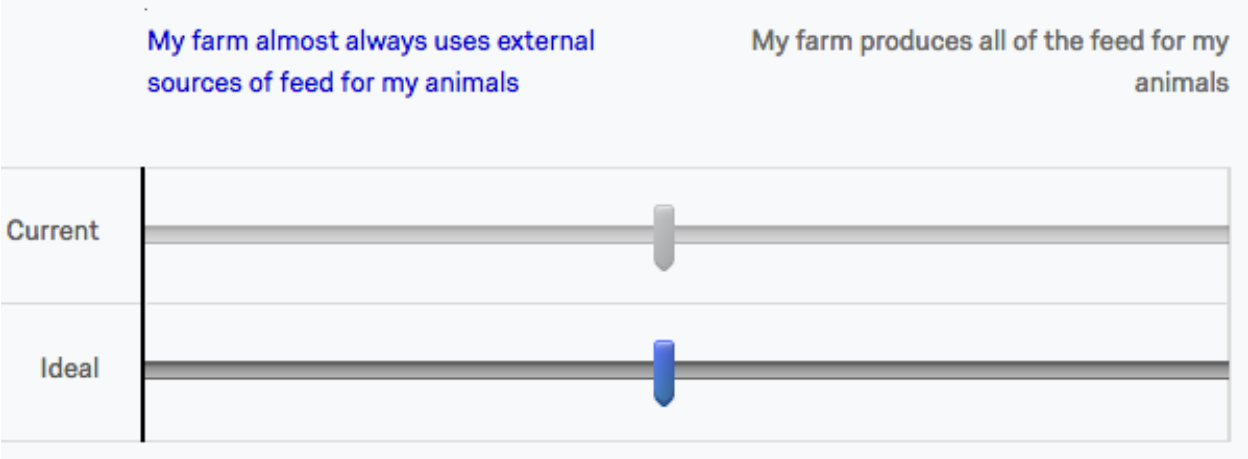


Q39: Type of pest control used

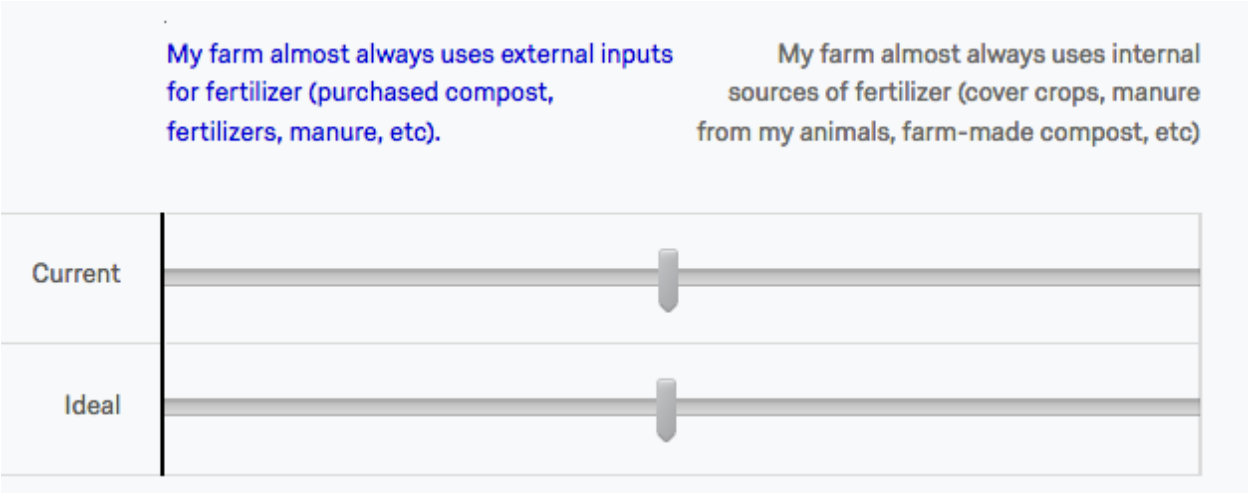


LOGIC: Display this question only to respondents who indicated they raised animals in Q5.

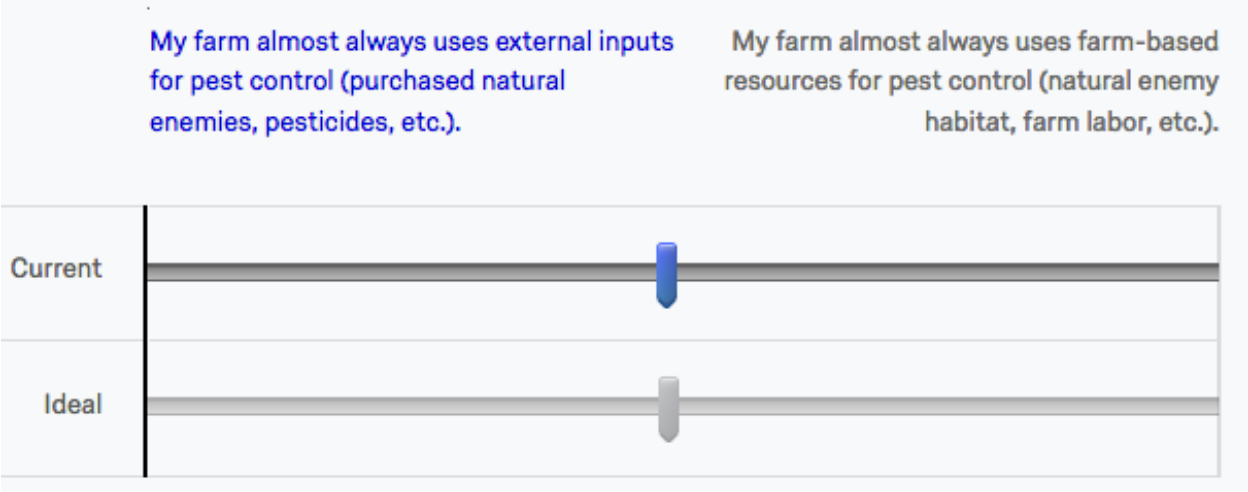
Q40: Source of feed



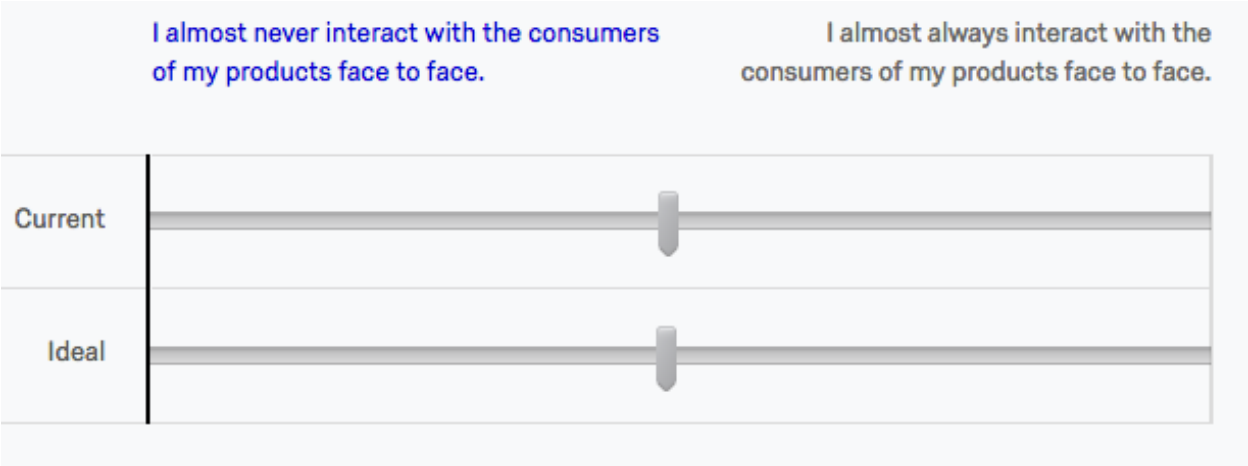
Q41: Source of fertilizer



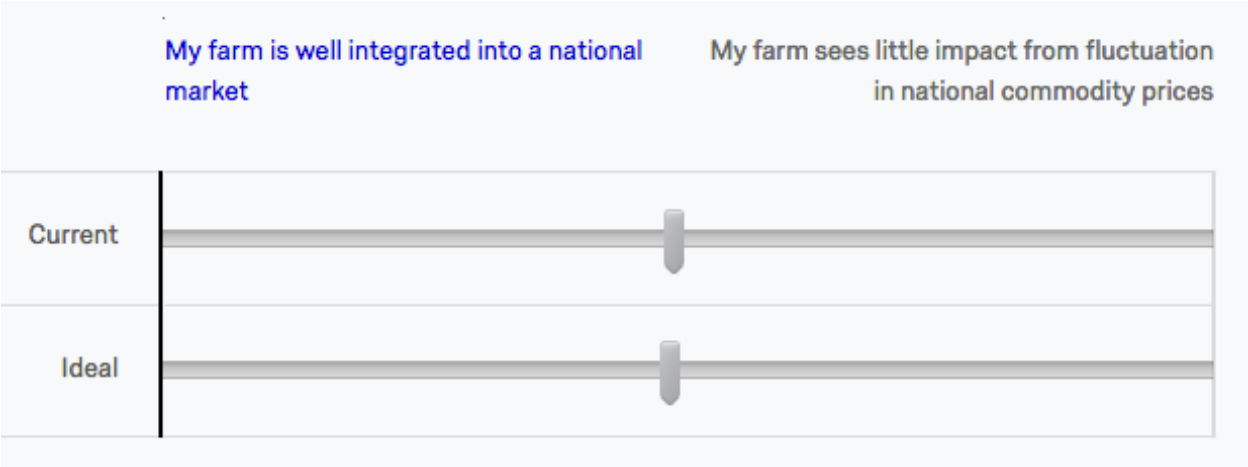
Q42: Source of pest control



Q43: Interaction with consumers

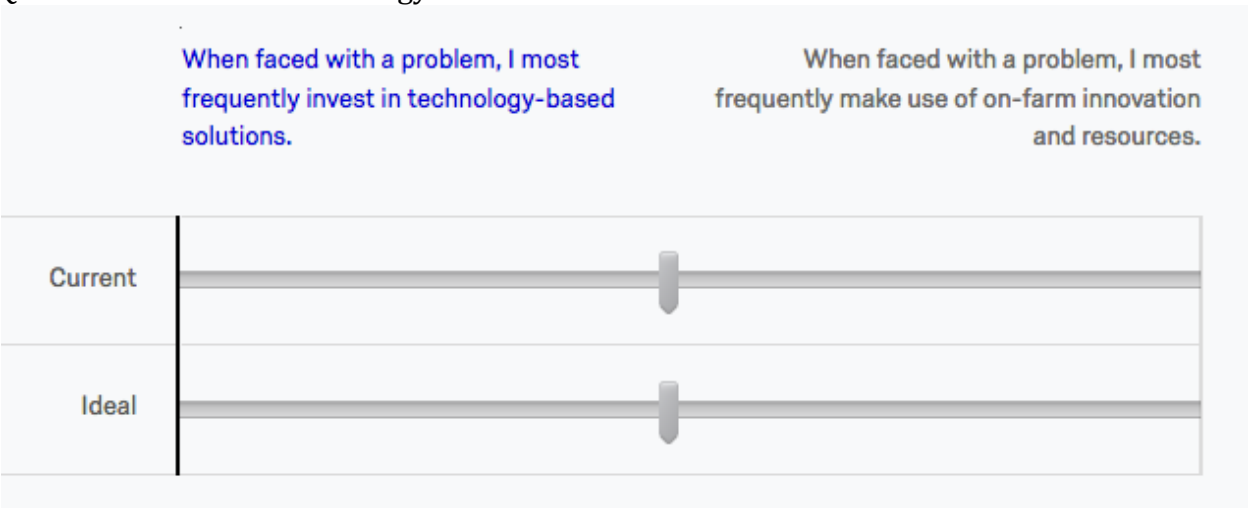


Q44: Connection to or insulation from national market



Q45: Impact on family or community

Q46: Use of external technology or farm based solutions



LOGIC: In the following question the order of answer choices is shuffled randomly for each respondent.

Q47 In the previous questions, you may have indicated that you would keep your practices the same, or that you would change your practices under ideal conditions. For each topic, how important is it to you that you change or maintain these practices? Please allocate 100 points across all topics. Indicate those that are more important by giving them more points.

${Q36/QuestionText} : _____ (1)
${Q37/QuestionText} : _____ (2)
${Q38/QuestionText} : _____ (3)
${Q39/QuestionText} : _____ (4)
${Q40/QuestionText} : _____ (5)
${Q41/QuestionText} : _____ (6)
${Q42/QuestionText} : _____ (7)
${Q43/QuestionText} : _____ (8)
${Q44/QuestionText} : _____ (9)
${Q45/QuestionText} : _____ (10)
${Q46/QuestionText} : _____ (11)
Total : _____

That's it! Thank you for your participation. If you want to help us better understand the sentiments behind the data, please consider signing up for an interview in which we will explore these topics in greater depth.

Q49: Are you interested in participating in an interview?

- ○ Yes. Please enter your email address: (1) _____
- ○ No (2)
- ○ Maybe. Please enter your email address. We'll contact you with more information: (3)

LOGIC: Display this question only to those who answered "Netherlands" for Q67.

Q70: Are you comfortable participating in the interview in English?

- ○ Yes. Contact information (1) _____
- ○ No (2)
- ○ Not sure. Please leave your email address, and we will contact you with more information. (3) _____

Q50: Are you interested in the chance to win a $50 Amazon/Bol.com gift card?

- ○ Yes. Please enter your email address: (1) ____
- ○ No (2)

Q51: Are you interested in receiving the results of this research?

- ○ Yes. Please enter your email address (1) _____
- ○ No (2)

End of Block: SECTION 3

Appendix 3: Interview Prompts

The interviews are semi-structured. The prompts below were used only as a reference guide. Not every interview included all questions, and often other questions not listed below were asked to follow an interesting line of conversation.

Introduction: Introduction to the research, and gain oral consent for participation and recording.

Values, Getting the Story: Start the interview with a discussion of how they got into farming, what they like about it and what sort of challenges they may have faced.

- How did you get into farming? And how long have you been farming?
- Why did you want to become a farmer?
- What do you like about farming?
- What challenges have you faced as a farmer?
- What are your future plans for your farm? If you were to stop farming, why would you stop?

Practices/Values: Then, transition to talking a little bit about how they farm.

- Do you have any farming practices that you feel are really important to you? Things that you do that you wouldn't want to do any other way? If so, what are they? [*These can be growing practices or practices related to running the business, customer relations, etc. Leave this question open ended at first. If they don't have a ready answer, ask them about things they've already mentioned, why they made that choice, and if they would ever make a different choice. This usually gets the conversation flowing. If they are an organic farmer, probe by asking them why they chose to farm organically*].
- What are you currently working to improve on your farm? What would your ideal farm look like?

Relations with Tech and Market

- How do you market your products? Why? Would you consider marketing in a different way?
- What do you see as the role of technology on your farm? [*Initially let people interpret this question however they will, but if the conversation falters, ask them about specifics, and clarify that technology can be anything from hand tools, to tractors, to computers*].

Farmer Network: Talk a little bit about how they see themselves relative to other farmers.

- How would you describe yourself relative to other farmers? What makes you different? What makes you similar?
- Do you have a network of other farmers? If so, who's in it?
- What does it mean to you to be a "good farmer?"

- Do you have other farmers you admire? If so, why do you admire them?

Additional Questions:

- When you need more knowledge on something, where do you go for information?
- What do you see as the role of your farm in the food system?
- If you could change the food system how would you change it?
- If you were to start your farm all over again what would you do differently? What would you keep the same?
- What do you wish you'd known when you started farming?