TWENTY-FIRST CENTURY LOCAL FOOD FARMERS IN NORTH TEXAS: AN EVALUATION OF FARMING METHODS, BEST PRACTICES, AND COMMON STRUGGLES

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Research with local farmers and local food consumers in the North Texas area which captures a contemporary understanding of the challenges and successes present in North Texas local farm-and-food networks. Through ethnographic research methods, including participant-observation and semi-structured interviews, the network of producers and consumers around several farmers' markets were evaluated to understand where the strengths of local food lie, and where networks need development to promote a more stable local food environment. Texas is newer to the trend of farmers' market development, with the local food system developed to foster community, educate, and promote the advantages of locally sourced goods. This research led to the academic discovery of climate adaptive ecological knowledge and farm commodification strategies; which are tools that farmers may use to build greater defense against threats to a farm's livelihood.

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First and foremost, I would like to thank my research participants. Without this community of North Texas farmers to learn from, I would not be writing this thesis today. But my gratitude goes much further than that; the farmers I met and interviewed for this project helped me to see the world through different eyes; they helped me to see solutions in so many things that they have done, and they allowed me to enter their personal lives, asking as many questions as I could muster along the way. I would especially like to thank Sue Newhouse, owner of Aunt Sue's Barn and my client in this research. Her openness to working with a researcher, her guidance during this research, and her confidence in my work have made her an invaluable part of this two-year journey.

I also would like to thank my husband, my children, and my closest friends. Without the emotional support and unconditional love that I have found in them all, I would never have been able to find my way in life, let alone conduct this research. I am thankful for their encouragement and guidance throughout this process.

I am thankful to my advisors for their guidance through graduate school and through this transitional phase in my life which became my thesis. I excel at confounding simplicity, and I know that my advisors were at times struck by how I can somehow always find the most difficult way to do anything. I am thankful for their patience, and my own, with my evolution through this thesis.

This project would not have been completed without the opportunity and experience of being a graduate student. It is strange to study culture while being immersed into the culture of graduate school, especially as a non-traditional student who has seen something of the world. I feel that the experience that I had during this program helped me to grow into the person that I

am today, and to understand the world that I have come from and the world that I would like to help create.

A sincere thank you to the entire Department of Anthropology, students and faculty, as well as the profession, for existing and partaking in discussions over nothing that somehow end up amounting to something. It is true that anthropological research usually ends with more questions than answers. However, somehow, I have come to understand so much more of how things work through the study of this field. Being a person from a non-academic beginning, the study of power structures, how we understand value, and how our perceptions are created was crucial for me to be able to see how structures of power shaped my view of the world.

Lastly and mostly, I thank my family, my friend-family, and the ebb and flow of life. I feel oceans of gratitude for those who have stuck through the hard times with me and worked through the monotony of trying to get there, and for those who have been here for the latest leg of this journey. My own life has been quite eventful and varied, and I have met quite a few people who have impacted me in ways they may never know. If I know you and call you friend, you are always in my thoughts of gratitude, especially here.

"The frog that lives under a coconut shell thinks that the shell is the sky" -Malay proverb

Before I started studying food, I was that frog.

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CHAPTER 1

INTRODUCTION

1.1 Local Food and the Question of Success

Local food in North Texas today is still a system that is forming and much of the details of how local food works are unclear to the average consumer. If I had done this research 100 years ago, there would have been no need to draw distinction to local food farmers. Even though there was global trade, refrigeration, and many other aspects of the national food system at play back in 1919, the role of the farmer had not yet become something that required characterization. This research is looking into the world of local food farmers in North Texas, to understand who they are and how they find success. Along the way, I was able to make sense of the local food system and to unearth keys to understanding modern sustainable farming - the values that it fortifies, the solutions it may create, and the greater implications that this way of life may hold.

Twenty-first century farmers are an elusive community. Many people on the outside of farming may conjure up images of a solitary man driving a tractor or milking a cow by hand. The term rancher may create even more romantic imagery of, perhaps, a lone man in a cowboy hat on a horse, driving a herd of cattle to market, with his dog picking up the slack. Industrial farming also has its forms of imagery. Many people who have had their eyes opened to the inefficient nature of factory farms have changed their diets due to watching documentaries showing overpopulated feedlots and the horrors of livestock processing facilities. Memes today of farmers in industrial row-crop agriculture show men in head-to-toe suits, spraying food crops with chemicals that they themselves refuse to breath. This leads to the question of who twenty-first century local farmers in the United States today actually are, and whether the images of the days of old or industrial conditions could still be accurate.

This research into the world of local farming began with my client, Sue Newhouse from Aunt Sue's Barn, asking the question: What makes local farmers successful? In order to fully evaluate this question of farmer success, it was first necessary to understand who the farmers in the local food system are, how they produce, what they produce, and the lived difference between local food farming in North Texas and the national food system.

The qualifications to be considered local farmers herein followed the same qualifications local North Texas markets use to consider items to be local food. According to one of the producer-only markets in the area, Good Local Markets, all local food producers are considered local if they are within a 150-mile radius of the market ("Our Farmers Markets – Good Local Markets" 2019). While a few of the other markets in the area limit that local food distance to a 100-mile radius, for the purposes of this research, farmers were considered local if the markets that they sold their goods and produce into were within that 150-mile radius from their farm.

The nature of ethnographic research, which requires in-depth interviews and engaging with the community being researched, is a quality over quantity approach to researching a community to help see them from an emic perspective, or from the inside. I was able to interview many farmers and evaluate their networks; however due to time limitations, and the sheer number of people in the area, it was not possible to capture everyone involved in local farming.

Knowing how to define success or what creates success turned out to be an ambiguous concept. Success according to local farmers in North Texas, can take many shapes. While trying to define success, I was brought back to the realization time and again that success is not an absolute destination for all farmers to reach. I found that success for the farming community had more to do with their own values and beliefs about the world and their own standards and morals

within it. A person's beliefs about food – what to eat, how to eat it, where it comes from, and even how it should be grown - carries with it many other insights into their approach to life.

1.2 Food: Value Choices and My Own Place in the World of Food and Farming

Food is an interesting topic to study because, on the surface, it seems as though the choice of which food to eat is completely due to taste. However, the foods people eat convey volumes about their culture, socioeconomic status, and personal history. Looking at food choices through evaluating what values are present in making those choices helps to reveal how the choice is made, the relationship between the people involved in the choice, and details about that person making the choice's way of looking at the world around them.

I often reflect on the changes to my own wants and aversions in food choices and how that has been shaped by the world I grew up in. Before I began studying food and especially growing my own food, I would put more faith in the nutrition of an apple purchased at the grocery store that is covered with wax and polished to a lustrous shine than an apple plucked directly from a tree that may be slightly pinker, a little spotted, or smaller than the grocery store apple. This preference for an ideal has stopped me throughout my journey into growing my own food, causing me to question my own lettuce, broccoli, garlic, onions, and several other fruits and vegetables that I have grown since that original apple. Looking at this preference in terms of a value choice and thinking what values a perfect apple is representing helps to explain the tendency better. In the industrial capitalistic system, standardization creates a consistent and equal value and representation of all products within a category. Things which fit the standard as closely as possible are considered the most valuable, hence the perfect apple.

Throughout this thesis, my focus will return to which values are present in discussing different agricultural methods, choices in diet, and interactions around food. The best way that I

know to remove the judgment which conflates discussion around food is to look at all food choices as a choice which is supported through the values found.

Although speaking about food choices in terms of values helps to remove the moral judgment found around food choices, it can still be difficult to see how a food choice may fit within a particular system of values. It would be all too simple to think that each person only has a single value-system that they live by. However, as Gregory (1997, 6) points out, it is the anthropological imperative view of ethnography which shows the "coevalness of rival value systems." These different value choices can be understood as existing in a way similar to how intersectionality works, but with a different type of agency.

Intersectionality is a theory which looks to the many different social identities present in a person to understand how their role within all those identities impacts both their place in society and to look at the barriers that they may face in society because of those layered identities. Value choices are similar to intersectionality because they also exist as multi-layered within each person, and may change according to social roles, relationships, beliefs, history, and access. As an example, the values present when selling something to a family member at a discounted price are both the domestic values of helping a family member through the support of a discounted price, but also the market values of capitalism, because even at a discount, there is still a monetary transaction present.

My own value-system is helpful in explaining my position within this research, my approach to the questions herein, and my method of delivering my findings. To explain, I am a non-traditional student. I originally attended a university from 1999-2001 for my undergraduate education, however I left without graduating because I decided I wanted to learn about the world through experience. Two months prior to making this choice, the terror attacks to the World

Trade Center in New York had happened. Although I did not pursue a college education during the time I was traveling the United States, the rite of passage that I created for myself helped me to make sense of the world around me and to find communities that I trust, and this was crucial to my development.

At the end of my travels, I became a single mother. Although I was married at first, due to the relationship being unhealthy, it did not last through the birth of my oldest daughter. In all my travels prior to her birth, I had never had difficulties with food; I was able to cook, and I did not contemplate my own nutritional health. Once she was born, I struggled to feed myself and my daughter, off and on, for the next five years. My struggle was mainly around affording nutritious foods but understanding nutrition and making the healthiest choices were also constant and reoccurring concerns.

Due to my personal history, my approach to conducting this research and delivering this thesis also represents my own value choices regarding food; namely, the need for accessibility and understanding. I see value in writing a thesis that is designed to be heard and understood by anyone. Coupled with this belief in accessibility is my belief in the power of community, and my applied role within it. Creating a thesis which is auto ethnographical, or tells my own story interweaved with my research, while also discussing choices in terms of values, is my approach to creating this accessibility.

Although this thesis is a report about the research that I conducted while interviewing local farmers, it also is the story of my own part within the world of food, and my life's journey to understanding the food system I was raised within. When I was first a single mother, I applied for assistance from the government to help afford food. I was told that I was at an income level just above the poverty line. As the woman on the phone phrased it, I made "just enough to

starve." I did not qualify for assistance, and if I had worked less or had made any less money in order to dip below that poverty line so that I would qualify, I would not have been able to afford daycare, my already late bills, or a home.

After my continued efforts to work constantly and learn as much about food and growing food as possible, the struggle of the first few years as a single mother gave way to a sort of equilibrium. The choices around food were never easy. The only way that I could find to raise my own child in a healthy manner still resulted in the choice to overlook my own health and nutrition, however this was a manageable choice for me at the time.

When I met and eventually married my husband, I had the opportunity to be a stay at home mother and to take a break from the corporate world, however I chose to return to academia instead to become an anthropologist. I was recently asked whether I would have preferred to pursue a program solely interested in food studies, without the anthropological aspect, or if I thought anthropology made my study of food different in some way. After some consideration, I realized that understanding our food system requires an in-depth knowledge of the history of food, as well as a theoretical framework to be able to understand the complex issues in the world of food, and finally a scientific approach to engaging and interacting with communities to learn and understand the lived part in the web of food while also being able to analyze the experience to create understanding. Anthropology offered all these techniques to understanding the food system in a singular process.

I have always been interested in food, and anthropology offers the method to conduct research from the bottom up, within a community. Over the years, as I have learned more about food along with my family, and have had two more daughters, I have come to understand the

intricate and complex world of food in America. The more I have learned about the food system, the more I have wanted to understand my role within it.

As this research was still being developed, my husband and I purchased our own small homestead in far North Texas. We have owned the farm for two years now, and the journey of learning about farm life has truly shown how this choice for us was both presumptuous and naïve. As an academic, it was foolish of me to believe that we would so easily fall into a life that requires constant manual labor, presence, years of learned knowledge, and a network of support. Every mistake that we made was through being outsiders to this way of life, and every step forward we have taken is through learning about and understanding not only one piece of the agricultural world, but how that piece functions within the entire system.

I am now entwined with the local farming community in North Texas, as both a researcher and a farmer. To bring this point home, as I am writing, I am also actively texting a few of the farmers that I interviewed. One of them is offering help and advice for our first baby calf, and the other is discussing my spring garden and a social media group we are both involved in, to offer help and support in these endeavors. Without their help, I would be without data for this research as well as support in our farming endeavors.

Returning to the idea of values, each farmer who participated in this research represents an array of different value-systems. Some farmers would use the exact same methods but have different values, or reasons, for using those methods. One aspect of alternative solutions in the local food system is that sometimes, a single solution benefits many areas. For example, a farmer growing vegetables using natural growing methods to benefit the environment is also selling vegetables with less chemicals and pesticides used to grow them, which is an added benefit to a

person's health. The values within local food farming in North Texas often overlap in this manner.

1.3 North Texas Farming History

Before looking to North Texas' food system today, it is important to know the history of food and farming in North Texas to understand the composition of the area. North Texas has hot summers and variable winters, and historically very little precipitation. According to a soil survey conducted by Carter, Bauer, Stroud, Francis, and Bushnell (1924), due to the way the Trinity River flows over Dallas county in particular, "90 percent of the county is topographically well suited to cultivation, permitting the use of any type of farm implement" (Carter, et al. 1924, 1214). Outside of the Dallas area, the vast grazing land is well suited for livestock and the black clay soil that is found in many other areas of North Texas makes it difficult to grow many types of plants.

The area of North Texas is also located at the southern tip of what is considered the "tornado alley" region in the United States. According to the National Centers for Environmental Information (formerly the National Climatic Data Center or NCDC), "meteorologically, the region known as Tornado Alley is ideally situated for the formation of supercell thunderstorms, often the producers of violent (EF-2 or greater) tornadoes" (Ncdc.noaa.gov, 2019). The hot summers in combination with low precipitation and unpredictable weather disasters result in harsh growing conditions for farmers.

Although this section is focused on the farming history of North Texas, the discussion will vary between the history of the regional area of North Texas and the history of the state of Texas as a whole. The effects of many of the historical developments to agriculture seen in all of Texas were felt directly in North Texas and caused changes to local farming historically. Many

times, a change to agriculture or economy in the entire state of Texas had a direct effect on the North Texas area. While my intent is to focus on the history of North Texas in particular, at times this is impossible without the holistic view of general historic changes seen throughout the state.

Historians Dethloff and Nall (2010) explain much of the history of farming in Texas. Before colonial Europeans began settling the area, nomadic hunting was the standard for Native American tribes in North Texas. The Caddo Indians, in far east Texas, were some of the first farmers in Texas history. Their gardens of corn, bean, and squash were supplemented through hunting and gathering. As the Spanish settled the area, the livestock industry was created. Small garden plots became popular, although some places like San Antonio created irrigation ditches to aid in watering larger expanses of cropland (Dethloff and Nall 2010, 1). The historical record prior to 1720 does not mention farming and agriculture in the North Texas area.

From 1720, warring with Native American tribes prohibited the growth of farms, but that began to subside around 1820, allowing for more growth in settlement. In 1821, when Mexico gained independence from Spain, it began introducing the empresario grant system, where settlers were given large squares of land (around 4,500 acres) to help settle Texas. This led to Texas being settled by a majority of White settlers from the United States, and to the eventual revolution of Texas from Mexico from 1835 - 1836. Slaves and the cotton-based plantation system were brought to the area through this introduction of northern settlers (Dethloff and Nall 2010, 2).

According to McElhaney and Hazel (2010), John Neely Bryan founded the settlement that would become Dallas on the eastern bank of the Trinity River in 1841. While Phillips (2006, 4) points out that this founding history negates 300 years of Mexican settlement, in addition to

the “14,000 years of Native American history in the Dallas area.” The Dallas site held the only crossing over the Trinity River for miles around, so it was originally purposed by White settlers as a trading post. The claim led to the formation and growth of Dallas as the county seat of the area. The city of Fort Worth notes their city’s settlement slightly earlier, in 1840 (“Fort Worth History” 2019). By 1873, a rail crossroads established Dallas as a key location in the transportation of goods (McElhaney and Hazel 2010). Historian Grace Parr (1976, 2-3) outlined the settlement of Justin in 1880, 40 years after Fort Worth’s settlement. Justin is a city 30 miles from Fort Worth, this helps to show the slow growth of the population into the hinterlands.

Several farmers who participated in this research also had distinct memories about the history of North Texas. These memories helped me to find more historic sources to piece together the 150 years that followed the establishment of Dallas as a key location in North Texas, leading up to today. There were also times when their own memories created a historical narrative where another source could not be found. The remainder of this section was created with the help of these sources and narratives.

From 1836, right after Texas joined the United States, until 1861, the state’s agriculture was composed of farmers invested in the plantation farming system, ranchers in the range cattle industry, and small family farms. According to the Dethloff and Nall (2010, 3), “most agriculture before the Civil War involved small, subsistence family farms.” According to Phillips (2006, 22), “approximately 60 percent of white Dallas county residents in 1860 were farmers, mostly with humble holdings and no slaves.” Small family farms were devoted to mixed agricultural methods; families raised livestock, and planted grains and a small family garden plot.

After the Civil War ended in 1865, the large farms in Texas went back to their plantation farming system, but instead of slaves, tenant farmers were the people working the land. The

tenant farming system was not favorable to the tenant, who only kept one third of their profits while the other two thirds went to land rent and payment for the use of farming equipment and housing. Despite that, the tenant farming system grew through the 1900's, largely due to the railroad system providing shipment of large crops grown on plantations to other areas (Dethloff and Nall 2010, 4-5).

Farmers in Texas have historically joined together to generate support for their own political interests. The Farmers' Alliance and Colored Farmers' Alliance were organized in 1872 and 1876, respectively. Dethloff and Nall (2010, 5-6) explain that these organizations "advocated paper money as legal tender, the unlimited coinage of silver, government control or ownership of railroads and telegraph systems, lower tariffs, a graduated income tax, the Australian or secret ballot, and the direct election of the United States senators, as well as expanded public education." These concerns directly affected the farmers' success, so they became the group's platform.

These parties proved influential when the national depression of 1893 heavily affected the prosperity of Texan farmers. The platforms that these parties supported led to the organization of the People's Party of America or the Populist party (Dethloff and Nall 2010, 6). As Phillips explained (2006, 58-59), the farming depression in the 1870's caused many rural migrants to come to Dallas to seek work, but they found the conditions there almost as bleak as farming through the drought. Phillips noted that "these rural refugees found hope in the reform agenda of the Populist movement and the Socialist Party, which demanded higher wages, an eight-hour workday, an end to child labor, and the right of workers to organize unions." Although Populism itself failed, the party succeeded in influencing national politics by 1896.

From 1900 until about 1920, Texas became prosperous again. Sherman, Texas, located

about 60 miles north of Dallas, became a major production and milling center for wheat by 1900. According to A.B. Connor's 1928 report: *Denton Wheat, A New Variety for North Texas*, Texas substation number 6, a Texas agricultural experiment station developed through Texas Agricultural and Mechanical University (Texas A&M), was created to test and develop a local wheat for the North Texas area in 1920 (Connor 1928, 1).

The wheat that we grow today is the product of research performed at these different agricultural stations. This research evaluated wheat hybridization in order to grow wheat that is easier, more reliable, and more plentiful. According to hay farmer Mark Chapin, there were many of these stations during that time because back then, wheat was grown regionally. As Mark put it, "wheat could probably be classified as the most local food you can grow because every region had them, had their own variety of wheat." A return today to artisanal or ancient wheat varieties requires not only knowing how to grow it but knowing which variety of wheat to grow for your location.

By the late 1920's, the basic structure of Texas farmland emerged, with 70% of the state's land attributed to livestock grazing and a little over 17% used for growing crops. Cotton and wheat were the two major cash crops for the state. The development of the tractor also greatly influenced the settlement and amount of land under cultivation in Texas. After the 1920's, major innovations were made in both tractors and in harvesting equipment.

Retired dairy farmer, Arthur Downe, remembered the changes to daily life and the increase to the amount of area that these innovations could cover in a day during our interview. Arthur recalled:

> I was probably five or six – I was in the first grade. My daddy put me on a B Farmall. A tractor. Pulling a two-disc breaking plow which, all day, ten hours a day, you could plow five acres. My older brothers had a M Farmall. They had bigger tractors with four-disc breaking plow, you could plow ten acres.

Arthur's daily contribution to farm work was greatly increased through the introduction of the tractor.

The innovations to harvesting equipment changed the face of agriculture through eliminating the need for team efforts to harvest. As Arthur's wife, Darlene, recalled, "a lot of times on those threshing things [harvesting events], way back then, you would help each neighbor. You may not get pay, but that would be your pay, you know getting your hay in or whatever that would be your thresh." Historically, farmers worked together to harvest crops due to the amount of manpower and time it took as well as the potential for the crop to spoil.

As we spoke of the history of agriculture in the area, Arthur showed me a picture of a threshing crew from *The Justin Story* by Grace Parr. Parr's photograph, captioned "Threshing crew at lunch" (Parr 1976, 86), shows a team of 22 men and boys, a cook, and a baby. This amount of working hands was required in order to bring in a harvest before the innovations of the combine and other types of harvesters became available. Once farming equipment of that variety became commonly seen in the area, farmers had less reason to work together.

As time passed, innovations to agricultural equipment continued. The most impactful inventions were those that made it so that large tracts of land could be farmed individually. According to Mark Chapin, the invention of the round baler has brought with it the largest change to the way hay baling operates:

> I'm making my own hay, but in the old days, let's just say 20 years ago, you would need a crew of at least three people to make hay. And you would've been making square bales. Three people would have been a minimum; you would have been killing the guy on the wagon. Before that we would have had 10 to 15 people, 20 people making hay. Because everybody had to tie everything, cut it by hand and do it. I can do everything all by myself now, I mean you know, with modern equipment and the round baler. The round baler changed agriculture. Nobody gives the round baler credit, but the round baler changed everything because now I can cut it, rake it, and bale it. It's loaded with my tractor. I never have to mess with another person… So, I don't know if that's good.

As innovations in machinery progressed, so too did hybridization and experimentation into different crops. Much of the motivation to hybridize crops was to find a more reliable crop that could withstand the weather in North Texas, and they were also hybridized to try to increase overall yields and grow more food per acre. With innovations to machinery, crop hybridization also took on the purpose of creating crops that worked best with the machinery that would cultivate and harvest them. According Dethloff and Nall, "marketing sorghum as a feed grain began in the late 1940s, when breeders succeeded in reducing the plant's height so as to permit harvesting with a combine and farmers with irrigation discovered the prolific nature of the crop when watered" (Dethloff and Nall 2010, 11). The human selected plant hybridization began to reflect the needs of the equipment as opposed to equipment being built to fit the plant. Many of these hybridizations also made the plants more resilient to weather and created an increase in crop yield, as is seen above in the sorghum example.

The hybridization of sorghum did not just make the crop more abundantly produced throughout the High Plains of Texas (an area extending through the western part of the panhandle), but it carried with it both a problem and a solution that would further change agriculture. The overproduction of the grain made the area have a surplus, however the cattle industry was thriving. Feeding sorghum to the cattle was a fast solution to both move the supply of grain and fatten cows to finish before slaughter (Dethloff and Nall 2010, 12).

Raising cows by feeding them grain also led to the revival of corn production in Texas. Coupled with the growth of the beef-cattle industry was the growth of dairying. The number of dairies in the area grew, and Wise county, where Arthur Downe's dairy was located, became a leading county for dairying. During the mid-1900's, Texas led the nation in grain -fed beef

production. By feeding grain to cattle, farmers found that dairy cows could produce far greater quantities of milk, which in turn added to the demand for grain production.

In the 1960s, further experimentation into increased production led to improved seed production and the use of chemicals to amplify production and protect crops from insect predation. As the Dethloff and Nall put it, this final boost to industrial agriculture, known as the Green Revolution (discussed more fully in section 2.1.4 Recent History and the Domination of Industrial Food), led to "large numbers of poorly capitalized marginal farmers" leaving the profession because they could not afford to compete (Dethloff and Nall 2010, 14).

From there, agriculture in Texas became more focused on the authority of the businessman over the authority of the farmer. Dethloff and Nall explain (2010, 15) that "increasingly, loan officers at such lending institutions as commercial banks, federal land banks, production credit associations, and insurance companies offered advice on planning." Retired dairy farmer Arthur Downe explained how industrial agriculture changed thereafter to solidify corporate controls of production:

> All the dairies got really big. You know, like thousand cow dairies. And they put all us little hundred cow dairies out of business. That's the way it changed. From the time I started until the time I quit. Yea, there are not any hundred cow dairies anymore. … They do it all. They have their own milk plant, their own dairy, their own meat plant.

This change to farming through vertical integration led to more consolidation of commercially produced land and less capability for smaller farmers to support themselves, due to the changes to the lines of production. As Dethloff and Nall concluded the section on Texas agricultural history, they stated that "by the 1980s a majority of Texans residing on farms earned their principal income elsewhere" (Dethloff and Nall 2010, 16). With the changing nature of farming, and the profession itself becoming a form of supplemental income by the late 1900's, it is easy to see why twenty-first century farmers have become an elusive community.

1.4 North Texas Growth and the Current Food Scene

There are multiple reasons why research into agriculture in the North Texas area is impactful. The state of Texas is 268,597 square miles, and the DFW metroplex takes up 9,286 of those miles, which is about 3% of the total land in Texas. According to Texas Land Trends, a site powered by the agricultural extension office in Texas (Texas A&M Agrilife), working land, or land used for farming, in all of Texas has been lost at a rate of 1% in the past 20 years. The working land lost in the DFW area, however, is much greater, with a rate of 9% in the past 20 years. For the county of Dallas in particular, land has been lost at a rate of 17%, with an overall loss of 13,421 acres (Texas A&M IRNR, 2018). The land lost in Dallas county is located on the same fertile soil discussed in section 1.3 North Texas Farming History.

The type of a change in the area may be better exemplified through examining land prices, because it can be hard to visualize percentage changes to land size. The land prices in all of Texas have increased by 214%, or over $1,072 per acre over the last two decades. By contrast, the prices in DFW have increased by 244%, or over $5,283 per acre in the last 20 years. The acute increase in land prices in North Texas overshadow the figures for all of Texas. In fact, in 1997, the market value of cropland in the Dallas/Fort Worth metroplex was $3,248 per acre and in 2017, this figure was $11,689 per acre (Texas A&M IRNR, 2018).

It is also important to evaluate the growth in the area according to the number of mouths that need to eat. While the population in all of Texas has increased by 36%, the population boom in DFW shows a more drastic increase of 51% of the population over the past 20 years. With over 2.3 million people new to the area, there is a greater need for either diversified agriculture or else increased food shipments into the state (Texas A&M IRNR, 2018).

The current food scene in North Texas was described by many of the farmers and the

customers who participated in this research as just beginning to focus on local food in the manner that is seen at farmers' markets nationally. According to some farmers, markets in other areas are hubs of community interaction. Although farmers' markets have been around since farming became specialized, the farmers' market present in local food today is different in its focus on building communities, educating consumers, and promoting one-on-one interactions.

Though farmers' markets are the easiest way for an outsider to access local food in an area, there are several other types of local food transactions which are present in the food system in North Texas. Some local farmers, like my client Sue Newhouse, have created destinations with their farms, hosting You-Picks and consumer direct sales as well as other events. Farmers may sell to area restaurants or grocers who are offering farm-to-table produce that is sourced locally; many of the farmers I interviewed had restaurant customers. Some local farmers sell into the homesteading and new-to-farming community, offering show quality or commercial grade livestock to consumers who either aspire to provide for themselves or want to build their homestead to one day sell into food production.

There is also a new avenue to generate stability in production which some farmers have started to pursue, which is the creation of food hubs and food sheds. Local farmers are starting to work together to offer a greater diversity of foods to restaurant chefs and end-consumers through creating hubs for food storage and delivery, as well as finding and providing software for inventory control and ordering. The development of local food hubs is still too recent for an assumption of how they may change the food scene in North Texas going forward.

1.5 Food and Health in the City

Cities today rely on a vast network of deliveries to provide food to their citizens. If there is the threat of a natural disaster, food flies off the shelves as the population stocks up to make it

through a few days or weeks. Although today city-dwellers may not consider agriculture or local food when they enter the urban sphere, their ability to pursue this lifestyle depends upon it. Joyce Marcus and Jeremy A. Sabloff (2008, 20), explain that cities originally arose along rivers, where agriculture could be practiced using irrigation, and there could be a surplus of food. The process of specialization, and later industrialization, led to greater numbers of people working in areas away from food production, relying on the market for access to food. Populations today rely on a food supply to sustain them, however how this supply works is largely disconnected from the specialized world.

Access to healthier foods is another barrier an urban dweller may face. Daniel Block, et al (2011, 203) point to this common barrier through showing its influence on language. They write that "the term "food desert" has become part of the general lexicon of urban life in the United States." They go on to explain that an example used in the Chicago *Sun-Times* to depict some of the worst produce available in the Chicago area was from the produce section of a large chain supermarket which was the only supermarket providing access to produce to the 117,000 residents around it.

The United States Department of Agriculture (USDA) analyzed data from the 2010 U.S. Census in combination with a 2006 directory of stores authorized to accept Supplemental Nutrition Assistance Program (SNAP) benefits to determine which census tracts represent food deserts nationally. A census tract is defined as a food desert by the USDA if it meets both the low-income threshold of a population of 20% or more living below the poverty rate within the tract and the low-access threshold of 33% of the population living a mile or more from a grocer (10 miles or more in rural locations) within the tract. According to this analysis, there are over 400,000 citizens in Dallas who are currently living in census tracts determined to be food deserts.

With a represented population of roughly 2.4 million, this means that 17% of the population of Dallas experiences barriers to accessing nutritious foods (United States Department of Agriculture 2019). It is ironic that these barriers to accessing food are happing literally on top of the loss of fertile, workable land in Dallas county. Additionally, this loss of fertile land through development shows that city planning and zoning could also greatly influence access.

According to 2018 tips from the CDC, cities can help support food and vegetable consumption, "by making them convenient and affordable where children and families live, work, learn, and play" (CDC 2018). The tip goes on to say that farmers' markets and farm-to-school programs are a few of the ways that cities can help support consumption (CDC 2018). Although there are several non-profits engaged in increasing access to nutritious foods across North Texas, a full evaluation of their reach and effect is beyond the scope of this research.

Large populations living in cities rely on agriculture for their health and livelihood. This thesis, looking at the success of local North Texas farmers, evaluates the viability of the local food system in DFW. An advantage to a local food system is the increased access it presents to the urban population.

1.6 The Implications of Local Food

This research looks directly at North Texas, but the implications of the local food system's resiliency to the bigger picture are important. Worldwide, urban living is continuing to replace rural life as populations migrate to cities. Although it may seem that urban living is more environmentally harmful than living in the suburbs or in a rural location, as Glaeser (2011, 201) put it, "living in a concrete jungle is actually far more ecologically friendly." An urban environment may not seem like it is in any way helping nature, but by concentrating the impact of civilization, the carbon footprint of a population is lessened. Clustering together and living in

an urban environment helps humans to lessen their impact on nature, however it is important to remember that urban populations are relying on agriculture to sustain them.

Not only do large urban environments rely on agriculture, but globally, a goal to create sustainable agricultural practices has been set by the leaders of nations in order to help ensure the nourishment of global populations. A review released at the United Nations 2013 conference on trade and development (United Nations, 2013) looks to how agriculture needs to change, not only to provide food security to the growing population of the planet, but also to withstand climate change (see Figure 1). The bullet points listed in Figure 1 are the directives from the review, and their focus on production methods contrast with contemporary industrial agricultural methods.

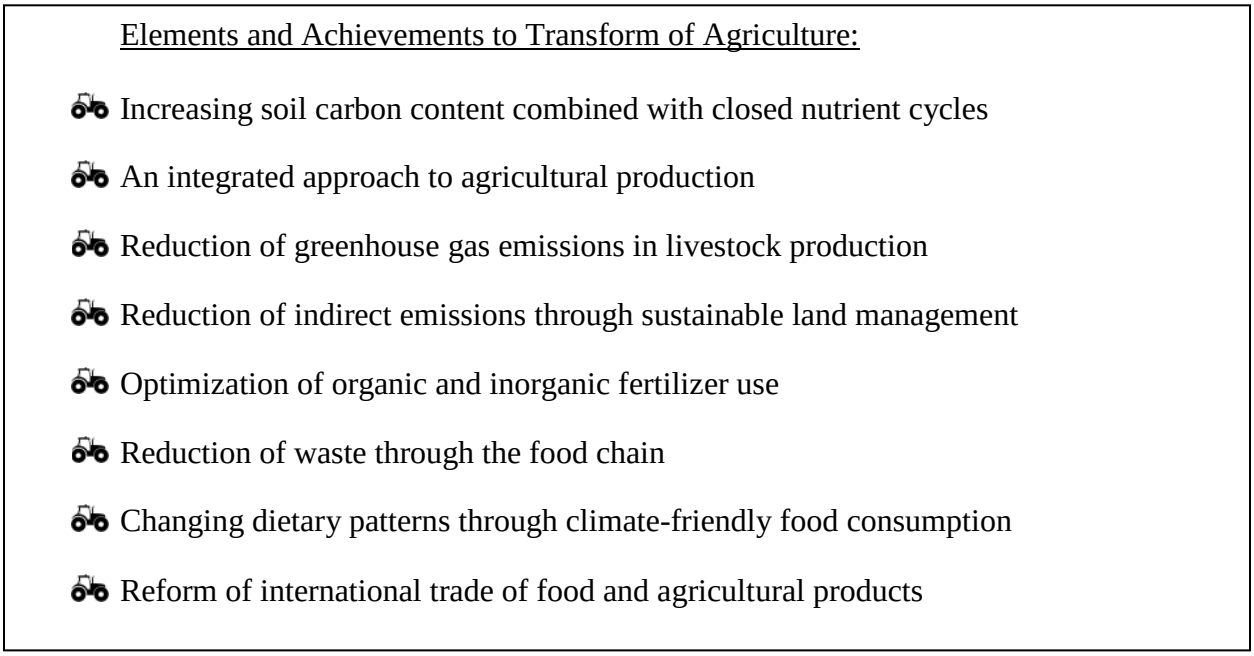


Figure 1: Elements and Achievements to Transform Agriculture (United Nations 2013, 7)

The United Nations' focus on these elements and achievements which can help to transform agriculture does not address whether farmers have the infrastructure in their communities and markets to withstand changes that may be implemented through policy. This thesis question evaluating what makes local food farmers in North Texas successful can serve as

a case study on the local food system in North Texas; as such, the agricultural methods and process of building a local food network presently found in North Texas may illuminate possible adaptations, advances, and challenges present in adopting sustainable methods.

1.7 Why Study Food

Food is sometimes the key to understanding culture. As Jennifer Wallach (2013) theorizes, it may be the "key to understanding the values and self-perceptions of entire societies" (Wallach 2013, xii). According to Eugene Anderson (2005, 5), food is the predecessor to culture; "I see both economics and ideas as growing out of practice – out of interactions that are repeated and repeated until people develop from these interactions the generalizations that we know as 'foodways' or, more broadly, as 'knowledge' and 'culture'," Sidney Mintz (1985, 4) would have agreed with Wallach and Anderson, as he states, "what we like, what we eat, how we eat it, and how we feel about it are phenomenologically interrelated matters; together, they speak eloquently to the question of how we perceive ourselves in relation to others." Although this thesis studies North Texas farmers, the research herein displays many areas where the culture of North Texas, and possibly the greater United States, is showing development and change, as will be discussed.

Food is used to establish community, ownership, tradition, sanctity, and independence. Food is mundane enough to be eaten daily without notice, and yet food is important enough to be missed if foregone for only a few hours. Food is sacred and holds a place, through communion or fasting, in achieving spirituality in many religions. By looking at a culture's food system, there is a great deal that can be learned about the beliefs and characteristics of its people.

Looking at the national food system in the United States today, it is easy to sit back and be completely flummoxed about the history of food and what exactly this food system says about

the nation. The big business of industrial agriculture seems like the food machine that drives the world; and consequently, traditional agriculture is now considered an alternative method of farming. In addition, many people, both those who support industrial agriculture and those who do not, feel that it is so powerful that there are no real possibilities for alternatives. As the chance for alternative solutions seems bleaker, academics are increasingly warning of the hazards of an industrial food diet.

With a diet of industrial foods, not only do people spend less but they also have more shelf-stable food that lasts. This reliance on cheap food is becoming a health hazard itself. Albritton (2010, 342) points to food as the real determining component to a person's livelihood. As Albritton explains, "study after study in recent years has come to the conclusion that the single most important factor in human health is diet, and diet is something we can shape." He goes on to weigh this against the fact that "cheap food is important to capitalism because it allows wages to be lower (and thus profits to be higher) and yet leave workers with more disposable income available to buy other commodities" (Albritton 2010, 342). The importance placed on affording food exists along with many other bill priorities that the average citizen must work into their budget. The lower their pay, the less that person can afford to eat healthily.

By looking at farming through looking at the entire food system, there is more transparency around employment practices, environmental concerns, and other areas of concern beyond diet. Ban Ki-moon, the Secretary-General of the United Nations in 2013, explained that the "key to better nutrition, and ultimately to ensuring each person's right to food, lies in better food systems – smarter approaches, policies and investments encompassing the environment, people, institutions and processes by which agricultural products are produced, processed and brought to consumers in a sustainable manner" (Ki-Moon, 2013). To understand why farmers

have grown the foods that they grow and to understand how changes may be possible, it is important to holistically look at the entire system.

My interests in this research are to document farmers found in the North Texas bioregion; their farming methods, best practices, and common challenges faced. That interest must, by default, look at food history, how food is produced and regarded today, and where food production is heading. My hope is to evaluate food in a manner which sheds light on areas of the food system which are unclear, and to look at the direction food is headed with a realistic view of what it takes for farmers to be successful in today's agricultural arena.

CHAPTER 2

LITERATURE REVIEW

2.1 A Brief History of Food in the United States Through Changes to Supply and Demand

While reading the many books and scholarly articles about the history of food and farming, I kept trying to find the exact point where the farmer's role changed. The truth is, as society's relationship with food changes through the supply available, it affects which foods consumers demand in the same manner that consumer demand influences supply. Looking to the history of food in America through the changes to supply and demand illustrates the changes that have happened to the role of the farmer throughout the history of America.

2.1.1 The Development of Taste

Taste is an interesting consideration in food, because what one person enjoys eating may be completely unpalatable to another. When it comes to taste, supply and demand have historically worked together to shape what a society is eating. Although each region may have their own food profile, and availability and needs may be varied, the industrial food system today has overcome most of the regional or local food systems in the United States. It is easy to forget how taste has been shaped historically, but through developing an understanding of how our taste forms as a society, and the historical processes that have formed American food tastes, it is easier to see how perceived taste works today.

Prior to colonization of the Americas , advancements in the history of farming happened with the invention of the iron plow and other tools for fencing and caring for animals as well as tools for planting, harvesting, and processing plant foods. After that, agriculture did not greatly change until the Columbian Exchange, which was a system of exchange established by Europeans. The Columbian Exchange is sometimes referred to as the triangle trade, because raw

goods were traded to Europe, those were made into products which were both kept and traded to Africa, and in exchange, slaves from Africa were shipped and sold to the Americas.

With slavery, millions of people were stripped of their rights as people and moved halfway around the world. The enslavement and subjugation of so many people was for the purpose of supporting plantation farming and growing cash crops like sugar cane and tobacco. Cash crops are foods and foodstuffs which are grown to sell rather than crops grown to eat and be used by the farmers. One advantage to those in control that was found in this new system of exchange was that European rulers could use these cash crops to exploit the proletariat workers back in Europe, through coffee, tobacco, and sugar giving them the energy to work without the satiation. Mintz (1985, 30-35) observes that capitalism was born in this system of exchange. According to Evans (2012, 219), the average weight worldwide increased dramatically following the Colombian Exchange and so, too, did the size of the population. The abuse of human labor to fuel power in agriculture led to greater production in food, which in turn caused the population to grow. As the Americas were being colonized, greater food stability led to changes in taste around the world.

Trends in food can sometimes dictate the type of foods commonly grown in a society, the type of farming which is profitable, and the methods of farming used to generate the needed crop. These trends also work the other way, with the type of food available to a society dictating their perceived taste as times. The history of food tastes in the United States supports this assertion. Past changes in the American diet may have been dictated by agricultural production or access to imports, but these changes in supply were viewed as preferential through societal norms changing to enforce the change. It is interesting to see how much this type of societal acceptance may dictate diet. What people eat determines what they define as edible, palatable,

and healthy, but it also represents identity (Wallach 2013, xii).

Many of the original European settlers in North America held Puritanical beliefs. Wallach (2013, 26) explains that the Puritans were a community who monitored each other; they believed that God punished the whole community for a few people's sins. Part of their piety was to participate in moderate, simple, uncomplicated eating. This uncomplicated eating may seem an easy idea, but thinking back to colonial America, the food choices and processing abilities that settlers had were nowhere near the capabilities that we have today, and simplified eating may not have been very palatable.

Prior to 1756 and the start of the Seven Years War between France and Britain, colonists who were not Puritan ate foods that they identified as British because they had access to those imported foods. After the war ended with the Treaty of Paris in 1763, England had to get back all the money it had spent in the war, so the tax acts started rolling through the colonies. The Boston Tea Party in 1773 as one of the American colonies' first real defiant acts against these tax acts. After the Boston Tea Party, tea fell out of favor and coffee became an American tradition, it became a more patriotic beverage. Pointing out the American difference became important.

The Boston Tea Party represents one of the beginning stages of the Revolutionary War, which lasted from 1775 until 1783. Once the war began, Americans could no longer access European imports. Wallach (2013, 50) explains that the shift in taste was believed to be preferable; "for many, plain cooking, much like that which had been favored by the Puritans, came to symbolize American superiority over frivolous Europeans." An unseasoned diet became a way of displaying a patriotic identity.

Going forward through the history of the United States, the first critique to the American diet and solution to be a better American, was made by Presbyterian minister Sylvester Graham

(1794-1851). He thought gluttony was worse than alcoholism and believed humans were supposed to eat whole, raw foods – not only that it was better for their bodies, but it was better for their morality. Although his diet did not catch on, a lot of his notions about the value of fresh, raw food did find their way into the greater populace (Wallach 2013, 144-148).

A "cereal revolution" in the late 19th century further transformed the American diet. The revolution was orchestrated by a familiar name in the cereal industry; the Kellogg family. John Harvey Kellogg (1852-1943) believed dietary reform was linked to social reform. Like Sylvester Graham, Kellogg believed that a better diet led to a better character. With the funding of Ellen White (1827-1915), a Seventh Day Adventist who had visions telling her to support him, Kellogg opened treatment centers and fed patients Zwieback bread ground to biscuits. These biscuits became the predecessor to granola. The revolution, however, did not catch on until Kellogg's brother, Will Kellogg (1860-1951), whose specialty was advertising and marketing, opened the Kellogg cereal company (Wallach 2013, 152-155). As the demand for cereal increased, a greater emphasis was put on the need for grain production.

These early days of changes to diet in America show that taste is something which is culturally created. The preferred American diet has changed from one preferred food to another to symbolize patriotism and independence in the past, this has happened concurrently in history, as the access to the supply of those no longer wanted foods has changed. Beliefs and perceptions of things that have nothing to do with flavor at all can have a great effect on what someone thinks tastes good.

2.1.2 Innovation in Food

Although the changes in access may have been perceived as a changing preferred diet culturally, farmers have continually sought to innovate farming practices to increase yields and

expand variety. After the arrival to North America by early colonists from England and the start of land appropriation from Native Americans, small family farms became the standard in the United States. These farms grew multiple crops and had mixed livestock. These early days in farming created a situation where many different agricultural methods combined to advance a farmer's success.

Originally, some settlers were taught by some groups of Native Americans how to farm in the Americas, depending on the relationship between the colonists and the people whose land they settled upon. Many times, the settlers' interest in this knowledge only lasted until they were able to import iron plows and livestock from Europe, at which time they reverted to the farming methods from their lives in the Old World. In addition to adapting European practices, early settler agricultural methods were adapted using knowledge of farming methods from slaves brought to the Americas from different areas in Africa (Wallach 2013, 34-45).

The small family farm was the most common farm in the United States until the mid-twentieth century, when the industrialization of food and economic policies supporting corporate production made it much more difficult to fund. According to Dimitri, Effland, and Conklin (2004, 2-3), "by 1970, more than half of farms had off-farm income, and by 2000, 93 percent of farms earned off-farm income." Looking back, it is interesting to see how innovation was one of the driving factors that made the industrialization of food possible. Innovation helped to create the mechanization used in industrial agriculture and made the world of food easier to navigate in many ways, but it also created a situation where those who could not innovate were destined to perish.

Goody (1982, 72) explains the major innovations in food production and processing, worldwide, through these four themes: preservation, transportation, mechanization, and retail.

Looking through the history of these developments, it is easy to see how they are related; preservation of food is what created food that could be transported internationally, and mechanization standardized the processes of harvesting, processing, and packaging foods for retail and wholesale markets. Preservation through canning was originally sought by governments in order to feed their soldiers during times of conflict. According to Wallach (2013, 102-104), canned goods saw a lot of innovation worldwide, but it was not until the Union army used canned food to feed their troops that they began to be seen afterward across America. Troops returned home with interest in a more healthful diet.

Preservation using natural ice was common in colder climates. Goody (1982, 78) explains that as early as 1806, businesses in Boston would sell ice gathered from local ponds to be packed into early "refrigerators" in family homes. However, that was not commonly seen in warmer climates like North Texas. Retired dairy farmer, Arthur Downe, showed me a structure built when his land was first settled that was used to help preserve food by keeping it cool. He said Texan settlers would build closet-sized rooms from rocks and place a large rock and container across the top of the structure. The structure was built in a shaded area close to the settler family home. The container at the top was filled with water and the water would keep the foods placed inside of the structure cool, much like a root cellar, with the water above used around the home.

Different methods of preservation kept foods safe for consumption longer, and through transportation these preserved foods were able to reach greater distances. The timeline in Figure 2 shows the 150 years of innovations that took imported food into the interior of the United States. The goal of development in refrigerated preservation was to safely transport frozen, perishable foods. With refrigeration in box cars, perishable foods could be shipped greater distances. Steamboats made it possible to transport fruit and vegetables up the American east

coast, and then refrigerated train cars shipped those fruits and vegetables to the interior. Canals brought ships and goods inland and trains brought them coast to coast.

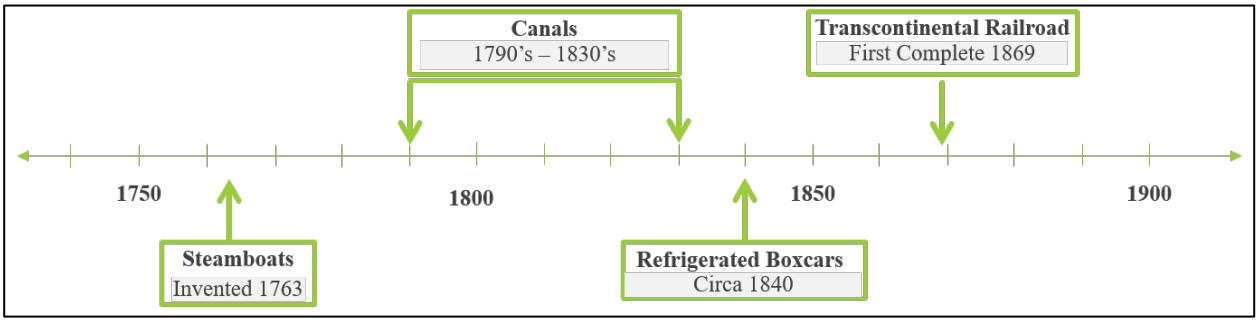


Figure 2: Food to Interior Timeline

Transportation and refrigeration combined to create one of the first barriers to a smaller farm's success in the national food system. Although meats were preserved in many ways prior to refrigeration, such as through salting or brining, these methods changed the flavor and texture of the meat from its freshly processed state. With refrigeration and transportation innovations, it became cheaper to slaughter animals before shipping, because the weight after processing was less than the entire animal. Only the larger companies could afford refrigerated boxcars when they were first invented. This facilitated larger corporations assuming control of the meat packing industry. Wallach (2013, 99) summarized the control, showing that by 1890, four companies were packing 89% of American beef.

Mechanization was largely beneficial to the canning industry. Goody (1982, 81) divides the types of mechanization into three levels; production in agriculture, in food preparation, and canning. The mechanization of agriculture, as was discussed in 1.3 North Texas Farming History, greatly changed the number of people required to plant, harvest, and process foods. Mechanization in preparation and canning helped in creating a standard for retail production.

The difference that standardization made to production greatly affected early American farmers' success. Oliver Evans changed the grain game when he invented his wheat mill in 1787.

Before, wheat was threshed and cleaned by hand. His mill threshed the wheat without human contact and was more precise than the hand method. However, Oliver Evans' grain mill was so expensive that only the big conglomerates could afford it. The wheat they produced with the Evans mill was baked into white, fluffy bread that was more preferred by the American consumer. This preference led to greater profits for the larger conglomerates, so they were able to increase their enterprises and grow to incorporate smaller, community-based wheat-processing organizations. This marks the start of bigger food processing companies buying out small, locally owned processing facilities (Wallach 2013, 90-92).

The last of Goody's list of innovations was the development of retail or wholesale markets. Goody (1982, 82) describes the original open market as comprised of separate groups of craftsmen (butchers, bakers, etc). There were problems with this form of direct sale due to interlopers, as Goody explained:

> Great efforts were made by the authorities to prevent the intervention of any middle men, except in the long-distance trades where their services could not be avoided. Shops for buying food scarcely existed; the town authorities forced the food trade into the street market for the purposes of control. Frequent regulations were made against "forestalling" the market by buying goods outside it, against "regrating" those goods, that is, selling them at a higher price, and against "engrossing," or hoarding. At a same time an attempt was made to control the quality and the price. (Goody 1982, 82)

Despite these concerns, the first shift from an open marketplace in a town square to a closed shop was seen in Elizabethan times (1558-1603) due to the population growth in England; the main markets were too far from the newly settled communities, so shops began to open to serve the new inhabitants. These shops remained divided by type, such as butchers, bakers, and grocers.

The next change in retail was seen in an integration of markets. According to Goody (1982, 83), "it was the grocer dealing in dry, imported goods who led the second retailing revolution." This began in England; grocer's businesses grew through creating additional shops,

or branches, in multiple locations. Some of those same companies who were experimenting with opening multiple locations were also examining vertical integration or creating cooperatives to work together from production through distribution. Due to the nature of the goods which were sold and the ability to store them, grocer chains were able to create chains of stores in the same manner as other industries.

By the late nineteenth century, affluent Americans could eat whatever they wanted, whenever they wanted through innovations in agriculture, canning, processing, and the creation of retail shops (Wallach 2013, 93-97). These changes were beneficial to the preservation and transportation of food, and they largely affected the growth of corporate farming and the dilution of small family farms. At first, American families were resistant to industrial, premade foods. It was food safety concerns that caused consumers to later embrace them.

2.1.3 Food Safety Concerns Lead to Successful Branding

Early food safety concerns led to consumers seeking food safety from large food corporations. In 1898, the "embalmed meat scandal" between Major Nelson Miles and the United States military raised concerns over the safety of canned meat. Teddy Roosevelt was among the soldiers to testify in the scandal prior to being the president who pushed for meat inspection and regulations through the USDA. Wallach (2013, 105) stated that the investigation found the meat to be low grade, but not tainted.

Although the newspapers of the time covered the "embalmed meat scandal," it somewhat faded into history. The next blow to food safety came in 1906, when Upton Sinclair wrote *The Jungle*. Sinclair's work focused on the abuse of workers in the meat packing industry, but its contents caused upset in other areas. According to Gabriella Petrick (2012, 62), *The Jungle* was the first of many books raising concerns over the safety of the food system, the books that

followed targeted small producers. Petrick explains that women came to rely on “large producers as protecting them from harm.” In this manner, food that was sold by corporations better equipped to provide consistently shelf-stable food became the food that consumers trusted more.

Consumers’ specific food concerns were also addressed through retail packaging and advertisements. Devasahayam (2011) notes that the retail packaging and presentation of mass-produced foods represent “consistency, predictability, and reliability in terms of quality, and only the use of machinery could have brought about the production of standard foods on a large scale.” Packaging helped generate confidence in the safety of specific brands of foods and searching for a specific brand became a more reliable way of finding safe foods.

The development of a reliable food system motivated the consolidation of power in food producers. According to Edward Ochoa (2012), in the 1930s, governments increased regulation and legislation aimed at preventing food shortages. The New Deal in the United States put agricultural price supports into place and created production controls. Although this was helpful to farmers, Ochoa (2012, 29) states that the government supported large corporations over small enterprises because they were more reliable.

The New Deal in the 1930’s created a series of Agricultural Adjustment Acts; supports for farmers to help recover from the Great Depression. According to Rasmussen (2000, 1158) this was the beginning of the United States paying farmers to have acreage reductions, or to farm less land, in order to better control production and enact a form of price control over crops. Through these supports, farmers with more land received more support. Although the programs from the New Deal were only supposed to be emergency resorts, Rasmussen states, “nearly every program that began in the 1930s is still in effect.”

In World War II, the American economy changed again. Due to the need for workers,

women filled the workforce. With women no longer in the home to prepare family meals, the next step would seem to be purchasing premade meals to feed the household. According to Devasahayam (2011), “it was advertising and marketing, however, that were essential in promoting some brands over others. Women became the targets of aggressive advertising tactics as factory-made foods were repeatedly advertised as timesaving, nutritious, and pure because they have been produced in sanitized environments.” The belief that food preparation became easier through product pre-processing was not embraced fully until persistent marketing and advertising paid off.

The brands that were able to generate consumer loyalty became more powerful, continuing to buy smaller companies. This consolidation of power in the American food system is extreme today. As Lyson and Raymer (1999, 199) explain, “the degree of concentration in this industry has reached the point where the ten largest US based multinational corporations account for over half of the sales of food and beverages in the United States.” The shift in demand to safer foods from large corporations and the eventual success in marketing premade meals were the predecessors to the dominance of industrial foods in the American diet.

2.1.4 Recent History and the Domination of Industrial Food

During the past fifty years, agricultural innovations have continued to increase crop yields while greater innovations have been made to protect crops from pests. Seed hybridization was focused on creating seeds with the versatility of being grown in different environments, and the advent of genetically modified seeds completely changed the way seeds have been regarded. As food corporations became more powerful, agricultural technology also changed. Through consolidating food corporations, food choices to consumers became more limited, which affected food at both ends of production. Government assistance reinforced the power of larger farms and

has continued to reinforce industrial agriculture through today. Through all of this, industrial food increasingly became a standard part of the American diet.

The Green Revolution of the 1950's and 1960's served to increase agricultural production worldwide with the use of chemical farming inputs, advances in irrigation, and advances in technology. In the 1940's, Norman Borlaug, an Agricultural Scientist from America, invented a new variety of wheat in Mexico that, Rhodes (2017, 84) explains was "bred specifically to respond to fertilisers, and produce a greater amount of grain per hectare of land that is planted." With the invention of this and then, a rice seed that worked in the same manner, farmers were able to overcome their natural surroundings and ensure plant growth using fertilizers, herbicides, and pesticides. This gave farmers the ability to farm without rotating crops, mixing crops, or having to let fields lay fallow. Suddenly, farmers could focus on the one crop which brought them the greatest profit without having to create their own inputs through composting waste, or in using swidden (or slash and burn) agricultural methods.

Despite the acclaim, for the Green Revolution to spread worldwide, it required some government assistance. As Patel and Moore (2017, 150-151) note, "the Green Revolution required agricultural extension services and government field workers to proselytize on behalf of the new crops." The authority carried by these field workers in government position caused their advice to use the Green Revolution innovations to be perceived as the best way to farm.

Although the Green Revolution was foretold of as a revolution in agriculture that could give any crop the ability to grow anywhere, how it worked was much different. There are many different consequences, according to Rhodes (2017) of the Green Revolution and what has become known as industrial agriculture. Although grain production was increased to protect nations from famine, the nutritional values of the crops grown and foods produced from them

have led to a rise in malnutrition (Rhodes 2017, 86). The reliance on fossil fuels to create fertilizers, mine for minerals, and transport foods that could be grown locally is a main consequence to the Green Revolution, and the main way it is predicted to fail (Rhodes 2017, 97-98). Finally, Rhodes' explanation of the way the Green Revolution technologies have caused a population explosion which cannot be sustainably supported through the use of Green Revolution technologies (Rhodes 2017, 85-86) is one of the consequences that I am reminded of often in my research. The bottom line is that the Green Revolution is not the revolution in agriculture that scientists anticipated.

Another advancement in agricultural science is in genetically modified crops. Seed hybridization through manually cross-pollinating plants is a form of manipulation used to create more bountiful plants, and it has been a practice of horticulturalists and farmers since the early days of farming. The creation of genetically modified seeds and foods is a more recent innovation in agriculture, dating to the early 1990's. According to MacDonald and Whellams (2007, 181-182), genetic modification is any change to a trait made by intentional selection. They note that "this includes traditional crossbreeding techniques, although the recent frenzy over GM foods pertains primarily to transgenic modification achieved through micromanipulation of genetic materials in laboratories." Genetically modified foods created using laboratory-level manipulation are the foods which are debated in early 21st century headlines.

The genetically modified food debate is too large for this summary of American food history and it is still unfolding. Gerasimova (2016) summarizes the arguments of both sides around health (536), the environment (537), the economic choice of growing GMO seeds (538), and international development (540). Gerasimova's (2016, 537) explanation about the

environmental debate can be used largely to discuss all the debates around GMO foods, as they put it, “further scientific research is crucial.” Unfortunately, with innovations of this manner, the only way to understand the benefits or consequences of GMO foods is time.

One thing is certain with the GMO debate, it is not going to stop any time soon. Although there are quite a few critiques from both sides of the debate, the polarization of opinions of GMO seeds has made it so that an unbiased source can be hard to find. As Gerasimova (2016, 544) concludes, the argument is “not productive in terms of negotiating pragmatic, working solutions for the challenges of agriculture.” With plant production and crop yields a constant concern in agriculture, the polarization of the subject of GMOs is an interesting phenomenon.

The local food farmers who were involved in this research do not use GMO seeds. While they do plant varieties of plants that may not necessarily be heirloom, most farmers had varieties of fruits and vegetables that they preferred to grow, and those varieties are not available as genetically modified seeds. A benefit to planting seeds that are naturally developed (without transgenic manipulation) is that farmers are preserving diversity in nature by growing a diverse mix.

Although much more research will have to be done to determine how the use of genetically modified crops are affecting health, the environment, economics, and international concerns, it is helpful to evaluate who benefits from these innovations to understand the sides of the argument more clearly. The crops which have been genetically modified and are produced on a large scale are corn, soy, and wheat, among others. These crops are commonly used in industrial agriculture, and the profits from their sales mainly benefit large food corporations.

A separate phenomenon that occurred during the 1990’s was the growth of some food corporations through outsourcing their role as producer. Instead of focusing on processing and

production, these companies found ways to outsource the work while still turning a profit. Green Giant is an example of this changing role. The company began as a company that processed vegetables. Lyson and Raymer (1999, 201) explain how, in the mid 1990's, Green Giant became "the first 'virtual' food corporation. It owned no production or processing facilities. Today, Green Giant procures vegetables by entering into contracts with farmers around the world. It then outsources the canning and packaging of these commodities to [other] companies." Through being the broker between farmers and processing facilities and putting their brand name on the product, Green Giant was able to create a corporation that grows and sells food, but in no way physically touches that food.

Finally, since the New Deal, government assistance has propelled industrial agriculture while impacting local farming negatively. According to Bruckner (2016), agricultural subsidies that were first put into place during the New Deal, discussed on pages 33-34, had an opposite affect than their intention of enabling farmers to continue operating. Bruckner (2016, 623) explains that the United States' Congress has been trying to reform these subsidies; many reformers argue that "when subsidies are unlimited, they provide the nation's largest farms the financial resources to bid up land prices and drive their smaller neighbors out of farming." Although Congress has been trying to change the way farmers are supported, these changes have still helped to reinforce industrial farming.

The change from payments to insurance in the 2014 Farm Bill provides a clear example of the way these supports have been reformed and yet remain the same. Bruckner (2016, 629) describes the old style as "direct payments, which were received directly by farmers who grew specific "commodity crops" (mostly corn, soybeans, wheat, cotton, and rice) and were distributed based on historic production levels, irrespective of the current amount of production, price of

commodity, or profitability of a particular farming season." As the direct payment program declined in popularity among farmers who participated and those who did not, a new direction was taken looking to developing "safety net programs" through crop insurance.

The Federal Crop Insurance Corporation (FCIC) was created in 1938, however it was not until the 2014 Farm Bill that the government's involvement with crop insurance became so complete. Bruckner explains the relationship between the USDA and private insurance companies that the Farm Bill has created:

> Insurance policies are sold and completely serviced through 19 approved private insurance companies. Not only does the federal government pay the majority of producers' premiums on every single acre, regardless of how large they are or how much money they make, insurance companies' losses are also reinsured by USDA. In addition, the federal government reimburses the insurance company's administrative and operating costs. In total, these insurance companies have lobbied and negotiated for guaranteed profits approaching a 14 percent return on their investment.

Although the 2014 Farm Bill has been refocused from direct payments to crop insurance, it seems as though crop insurance may be an even murkier solution. Bruckner (2016, 629) argues that crop insurance has the same consequence for small to mid-size farmers as direct payments did; driving up land prices and inhibiting entry into the agricultural field. While many farmers require assistance through insurance premium payments due to crop loss, without an added control of knowing how much of the area has been farmed (of which there is not), insurance premium payments are paid in the exact same way as direct payments.

Bruckner (2016, 63-64) explained the history of farming subsidies, and how those uneven governmental supports from the 1970's reinforced large farms, creating a longer history of greater dominance in some areas. Bruckner explained that in southern states, large farms have historically been more common, and their dominance in farmland ownership is still seen today. The presence of local food networks in some regions of the nation are much stronger than

elsewhere, however there is no research into the frequency and strength of these networks in relation to their history of dominance by industrial farms.

Part of the reason why it is so hard to see what happened between the local food system and the industrial food system is that there were pieces moving in many different places which created the perfect storm for industrial food to consume the American diet. The original innovations which created industrial food were not enough to make it the cornerstone of the American diet. The Green Revolution, seed advancements, the consolidation of food corporations, and government support were some of the final steps in changing the way food is farmed and eaten in America. Going forward to food today, there were unanticipated consequences to the changes seen in the food system due to industrial agriculture.

2.1.5 Consequences of Industrial Food

Industrial farming involves farming land repeatedly – the land is not given a chance to regenerate. The reason for the repeated growth of the same crops is that today's American industrial diet is comprised of only a few ingredients. Those few ingredients have been manipulated to make it appear as though consumers have innumerable choices.

Corn proliferates the American diet in many forms, reinforcing the demand for industrial agriculture. According to Pollan (2006, 18), many of the seemingly diverse foods found in an American supermarket are made from corn in some way. He points out that even meat comes from corn because that is what is fed to cattle. Corn is grown in abundance throughout America, according to the USDA (National Agriculture Statistics Service, 2018), "corn has been and continues to be produced on more area [of land] than any other U.S. crop." Industrial agriculture has resulted in the separation of each farmed item into a monocrop design, as focusing on one crop was easier to ensure consistency and quantity of product.

By changing farms in this manner, the closed circuit of recycling outputs (dead leaves, animal manure, food waste) into inputs (compost, soil amendments) to feed the farm for the next season was severed. The need for inputs in the industrial food system grows continuously. As Montgomery (2007, 5) explains, “cultivating a field year after year without effective soil conservation is like running a factory at full tilt without investing in either maintenance or repairs.” Monocrop design requires great modification of natural systems through the untenable use of diminishing resources.

The industrial agriculture system is not sustainable mainly because the chemical fertilizer inputs used are made from non-renewable resources. These inputs are having a drastic effect on the environment as well. As Albritton (2010, 343) pointed out, “if the entire world adopted the American food system, all known sources of fossil fuel would be exhausted in seven years.” Without a replacement for the fossil fuels which are used in agriculture, industrial farming does not have a clear future.

One side effect to this system is that now, due to the bottlenecking of production, the risk of illness from food comes into the system from the side of the industrial, large corporation as opposed to the small producer – as witnessed in the earlier days of industrialization. Potter, Murray, Lawson, and Graham (2012, 81) evaluated industry-specific risks in their study of food recalls from 2004 through 2010 and found that “the processed foods industry is responsible for the largest number of product recalls, constituting 24% of all recall announcements in the USA.” Today, recalls due to food contamination are common throughout the United States and the most powerful corporations in the world are the most frequent offenders.

An additional consequence is the dangers many workers face at processing facilities. Schlosser (2013, 426) found that “meatpacking is the nation’s most dangerous occupation. In

1999, more than one-quarter of America's nearly 150,000 meatpacking workers suffered a job-related injury or illness." With more recalls in the agri-food industry, and the safety of the workers processing the food uncertain, the bottlenecking of production creates many problems.

The complications from the bottlenecking of production are not the only areas of concern in industrial agriculture. The way that foods and medicines are used as inputs also show the inefficiencies created through this separation of farming. Anderson (2005, 113-114) found that 35% of crops grown in the United States are grown to feed animals and 70% of antibiotics used in the United States go to livestock. These foods and medicines that go to supporting industrial agriculture are considered outside inputs to the system, and they are needed due to the methods of farming used. A farm that operates as a closed farm uses different methods to feed itself. Some of these methods can be found in Chapter 4 Exploratory Research.

Industrial farming also makes it so that CAFOs (Concentrated Animal Feeding Operations) have nowhere to put their animal excrement. Wallach (2013, 197) explains the level of waste, "the world's livestock produces more greenhouse gases than all combined forms of transportation. CAFOs produce millions of pounds of manure each year, 130 times the amount of waste produced by humans. This excrement is not processed by a sewage system but is allowed to accumulate in pools." The concentration of waste in CAFOs is also a consequence of the methods being used, as animal waste used in a closed system works to feed the system.

Food corporations have created a bottleneck of power in the industrial food system, and the farmer who grows the food, the consumer who eats it, and even the laborers at the processing plants are at the mercy of the brands who stand in control. As Renting, Marsden, and Banks (2003, 396-397) explain, through modernization, farmers were supposed to be able to increase their total production volume while also enhancing their technological efficiency. By the late 20th

century, markets were saturated, and production could not be increased any longer, but production costs continually rose as technology continued to advance. The race to invest in the newest technologies to have the lowest production costs has turned into a race to the bottom. This can be seen in the profits industrial farmers make and how many of them can become reliant on farm insurance, farm loans, and industrial food processors to keep their farms in business.

These changes to farming have influenced the health of populations globally. Anderson (2005, 253) explains that since World War II, there has been no famine due to disaster, only due to accessibility. Ochoa (2012, 35) notes that today, instead of famine, we see chronic hunger and malnutrition. Despite these barriers to access, the apportionment of food to hungry populations is not addressed in concerns over the future capabilities of agricultural production.

Industrial agriculture already produces enough food to feed the world and there are still people starving. According to the USDA (2010), research shows that in the United States, we waste 30 to 40 % of our foods annually (USDA | OCE | U.S. Food Waste Challenge | FAQ's). Food is both inaccessible and abundant today and due to this ambiguous existence, it is difficult to have realistic discussions around whether agricultural production needs to increase to account for a growing population in the future.

The methods of farming used today will only lead to a continual rise in the price of food. Albritton's (2010, 348-349) reasons for rising food prices (Figure 3) shows a list of reasons that are as relevant today as they were when written in 2010. The prices of foods today are artificially low thanks to government subsidies, but as stated previously, those subsidies benefit industrial agriculture through paying for land not necessarily in production and focusing on commodities. According to Franck, Grandi, and Eisenberg (2013, 329), these subsidies also penalize farmers

for growing ‘specialty crops’ like fruits and vegetables. By disadvantaging farmers outside of industrial agriculture, the cycle of increasing food prices is reinforced.

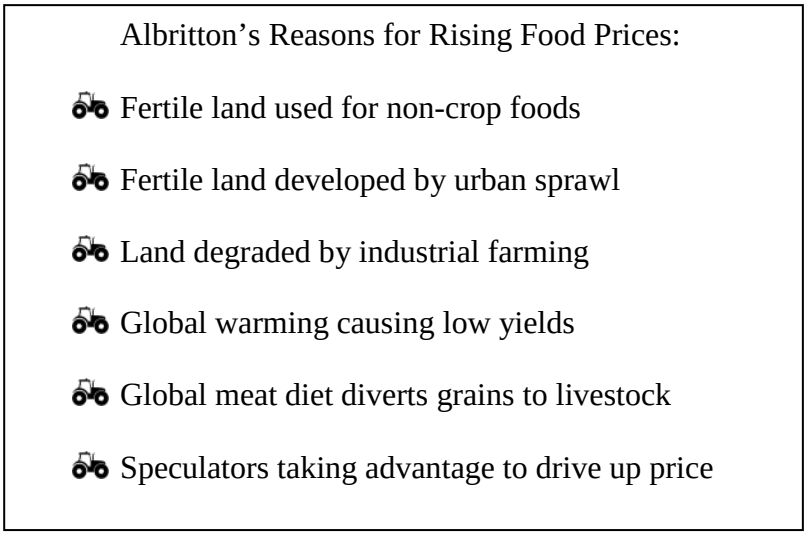


Figure 3: Albritton's Reasons for Rising Food Prices

Industrial agriculture creates food prices that are artificially low through both subsidizing foods and using migrant labor, and many times this migrant labor is performed by undocumented immigrants. According to Devadoss and Luckstead (2011, 858), since September 11, 2001 and the development of Homeland Security, “as border and domestic [immigration] enforcements intensified, entry of undocumented immigrants into the U.S. farm labor force was thwarted, which led to an acute labor scarcity.” The use of undocumented immigrants by industrial agriculture has created a situation where the industry is experiencing a labor shortage due to more intensive immigration enforcements. Without migrant laborers to harvest labor-intensive crops, those crops will take too long to harvest and rot in the fields.

Another aspect of migrant labor in agriculture is that the type of continuous intensive labor performed quickly takes a toll physically, while compensation for the labor is minimum. As Holmes (2013, 30) pointed out, this labor may not seem like much from the outside, but it is a person’s entire world when they do it. “They ‘dedicate everything to the fields’ in the United

States, their labor and skills, their energy and time, and their identities and reputations, as well as their minds and bodies…[they are] offered the sole prospect by the transnational market of picking fruit bent over all day, every day, moving quickly, exposed to the pesticides and the weather" (Holmes 2013, 30). The use of migrant labor reinforces the artificially low prices found in food, as the migrant laborers used by the industrial farms are the only laborers willing to accept the low wages given.

Taking a step back from this and looking at the history of trade, it is apparent that many of the migrant workers who are so dedicated to their work here in the United States would not be here in the first place without trade policies like NAFTA. As Holmes (2013, 3) explains:

> Especially important is the U.S.-initiated North American Free Trade Agreement (NAFTA) banning economic barriers, including tariffs, between signatory countries. Thus, the Mexican government was forced to erase tariffs, including that on corn, the primary crop produced by indigenous families in southern Mexico. However, NAFTA and other free trade policies do not ban government subsidies. Thus the U.S. government was allowed to increase corn subsidies year after year, effectively acting an inverse tariff against Mexican corn.

These undercut farmers who become migrant workers choose to journey from Mexico due to the responsibilities of feeding their families and sending their children to school (Holmes 2013, 3).

These consequences consider the negative impacts somewhat inherent to industrial agriculture. They exist due to the methods used in industrial agriculture and the laws and infrastructure within the United States that support it. These consequences culminate in the overall concern over how the industrial food system will be able to change to move forward, because without being sustained in some fashion, it will be exhausted.

2.1.6 Back to the Land: The Draw of the Local Farm-and-Food System

For consumers' diets to change going forward, a main requirement would be a change to the accepted pricing and seasonality of foods. According to Joshua Lockyer (2015), there are two

camps in the American food system today; one that believes that economic and technological means are the answer (producing enough food at a low cost) and one that believes that local agriculture is the way to go (to produce food while enhancing community). Those who are in the latter camp need the help of the community for success. Lockyer (2015) quoted one of his participants to display this need; "(being successful means) preserving our natural resources via the soil, land and water that we need to grow food, but also the economy that we need to grow food because if it is not economically viable it is not sustainable. It also includes the sustainability of the people who are involved in that system" (Lockyer 2015, 58). For local food to be sustainable, it needs a sustainable community of support.

A sustainable community of support may be more attainable as more people find their health affected by diet. Melby and Mauger (2016, 56) state that "the myriad linkages between contemporary agricultural practices and environmental and human health effects argue for a paradigm shift from merely producing food to generating food by employing fertile soil and supporting biodiversity within agricultural and human ecosystems and ensuring equitable access to reduce health disparities." In other words, there is a link between modern industrial agriculture and human and environment health detriments and shifting priorities to value the different forms of agriculture found in local farm-and-food systems would also support better human and environmental health.

There is a need to educate the consumer about the values implicit in a shift in farming and the consequences of continuing down our current path. Small farmers in local markets are not able to offer the same pricing and warehouse-type production consistency in the same way industrial farmers can. The consumer may be more prone to buy local foods if they have an understanding of what goes into growing fresh local foods, both financially and seasonally, and

also if they are empowered and supported to do so within their own community. The creation of a community of support around this shift in farming is the goal of many farmers' markets today.

At the farmers' markets I attended, the farmers worked together to generate a united market which draws in more consumers. It may seem counter to the ideals of capitalism for the farmers' market community to work together to support all farmers at the market, to generate a sort of whole market feel instead of individual booth representation. Creating this community of support for local farmers represents changes to the supporting community's standards of value. According to Gregory (1997, 6), standards of value are the different ways that "different people define money to suit the pragmatic needs of the specific situation they find themselves in." Although this sounds foreboding, it translates to farmers at the market working to all be successful in their sales together, through the market.

This community of support can also be seen in the customers at farmers' markets who are willing to spend more money on produce than they would at a supermarket, because the difference in value represented in purchasing local food. The values that local food consumers find in North Texas local food are explored more in 5.1.2 Motivations to Buy Local. Those values still show the capitalist tendency to spend more money for a more valued item, however the values found in making a local food purchase are focused on better flavor, building community, and helping the environment, among others.

Another way to create and engage with a sustainable community of support is through agritourism. Agritourism takes place when a farmer offers some other form of service or product to increase the profitability of their farm. Some small farmers today are opening their farms to visitors to both educate them and sell them their produce. Farms that offer farm tours, you-picks, farm weddings, farm-to-table dinners, or other type of farm experience are farms that are

embracing agritourism. Brandth and Haugen (2010, 41) observe that, to be a host, the farmer must adjust their method of interaction and focus on the care and maintenance of their guests. The advantage is that the roles of farmer and host have shown to be dually reinforcing – the host is a better host for having good stories about farming and the farmer is a better farmer by doing things like milking by hand for their guests.

This trend in support of agritourism may be a sign of shifting tastes in America. In the same way American taste came to prefer the bland, it has come to prefer industrialized food. A cultural revival of small farms through agritourism and farmer education through interactions both at farms and at farmers' markets may be a solution to the excessive prevalence of industrial foods. In that same manner, this link between local farmers and concerned consumers may serve to sever the dependence of so many people on foods that are produced in an unsustainable fashion.

An additional benefit to support of agritourism may be found in overall exposure to nature. James, Hart, Banay, and Laden (2016, 1344) explored the relation between women's mortality and exposure to greenness (or vegetation) and found that more vegetation corresponded with a lower mortality rate in women. They explained that this suggested the association was "at least partly mediated by physical activity, particulate matter < 2.5 μm, social engagement, and depression." Although these findings measured the greenery at home residences, the exposure to greenery found during a farm visit may also benefit mortality.

Although there are many benefits to supporting local food, barriers to establishing a community of support are numerous. One barrier to developing a sustainable community of support is that the local farm-and-food system may not have the infrastructure to allow equal access to all people. For instance, the government has programs, like SNAP, to ensure that

nutritious food is accessible to lower income people through funding. Although the SNAP program may provide funds, it does not supply the actual food. Shoreman-Ouimet (2011, 248) explains that in some communities, "the power that in theory ought to be held by governmental and federal level officials has been transferred to the local level organizations." When it comes to food in the United States, this is exactly the case.

Until local food is available in a way that it can be accessed across class and race lines, it is not a food system which can support the public. As Alkon and McCullen (2010, 937) explain, "just sustainability" is a concept emphasizing "both the sustainable use of resources and the just distribution of environmental risks and benefits." The advantages of local food are not privileged advantages and should not be seen as such, especially if the system is going to become an alternative to industrial food.

To bring access of local foods to more diverse groups, local farmers and farmers' markets could follow a model of middle-out conservation. Shoreman-Ouimet (2011, 234) explains that middle-out conservation occurs when both "local conservation organizations, [and] individuals with social influence and a stake in local affairs, mediate between federal officials and local players." Although the shift to local produce may first only be accessible by more affluent members of the community; through those community member's support, farmers may be better able to offer competing prices to a wider range of customers and local, state, or even federal legislation may be passed to protect supportive communities' interests. Additionally, community leaders can choose to work across race and class boundaries with other community leaders to continually grow and form the local food system, their social influence gives them the power to do so. One of the most significant factors in creating a sustainable local food system is having a community to support it.

2.1.7 Alternative Food Production

One result of the power of industrial food producers is the confusion the American public has about how they can eat ethically. Steven Schnell (2007, 551) writes that there have now been two waves of alternative food movements since industrial food has reigned supreme. The first wave was organic growing. Organic produce and even organic shelf foods have become integrated into mainstream diets. Organic agriculture has become more common because the demand for organic foods keeps increasing. However, just because food is grown organically does not mean that it is grown sustainably or seasonally. As Schnell (2007, 551) explains, as organic has become more mainstream, the large-scale producers still use industrial methods. Schnell explains, "in response, a 'second generation' of alternative agriculture has emerged, one that focuses explicitly on the need to create local food economies." Local food economies are considered alternative food systems to the national, industrial model.

There have been food professionals who are calling for change to all areas of the food system. Evans (2012, 223) points to how these changes are being proposed, "in the twenty-first century, there have been increasing calls for a more fair worldwide distribution of food, for a refocusing away from industrial agriculture that has particularly characterized world farming in the last forty years to giving more attention to small, sustainable farms, community farmer markets and even to redefining what food really is." Many of the leaders of the food movement(s) in America today do not refer to industrial food as food at all, but as "food-type stuff."

It is ironic that researchers, such as Anderson (2005, 257), have pointed to the need for farming today to be done in the context of conservation. Before industrialization, the closed circuit of inputs and outputs on the mixed farm showed an inherent use of conservation which

ensured a farm's success. It was only through industrial farming that this idea of conservation was lost. Anderson's methods of revolutionizing small farms (Figure 4) hearken back to days before industrialization. The mixed farm of today combines traditional farming methods with technological innovations to both conserve while producing yields which are comparable to yields found using industrial inputs.

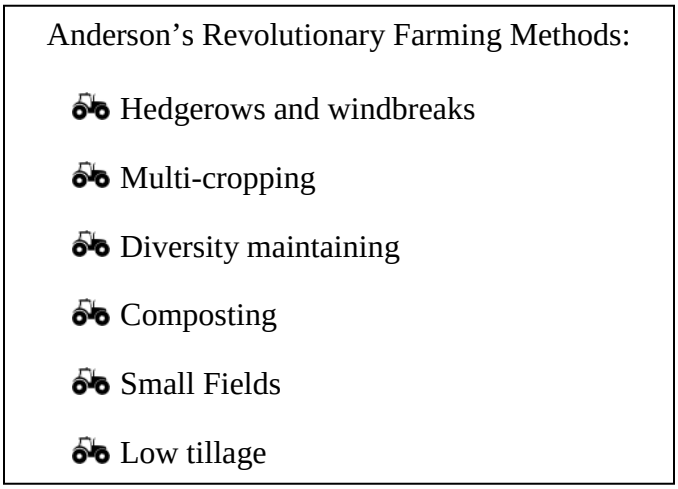


Figure 4: Anderson's Revolutionary Farming Methods (Anderson 2005, 268)

Brandth and Haugen (2010, 37) refer to the farmers who are embracing these revolutionary standards as the "new peasantries." They state that "repeasantization means strengthening the farms' resource base without making them dependent upon financial and industrial capital." Basically, diversifying the base not only makes the farm more secure, but also it increases autonomy and value-added worth through diversification, not monopolization. For example, a farm that is growing berries may diversify by selling jams or dried fruits, or host berry festivals or other events – the sale of the fruit is not the only source of profit which may be found through growing berries and diversifying in this manner does not require that farm to monopolize the market. Willis and Campbell (2004, 317) explored the "praxis of survival" they found in a group of "neo-peasants" in the Cévennes region of France. They found that these farmers practiced a blend of "the survival strategies of the old peasantry with the skills and

abilities of the educated urban elite." While local farmers are combining traditional methods with new technologies, they are also embracing the different ideas of salesmanship and marketing to make their farms more profitable.

Megan Larmer's (2016) article "Cultivating the edge: an ethnography of first-generation women farmers in the American Midwest" uses permaculture terminology and values to describe the women farmers with whom she worked. The title alone points to one of the main ways that permaculture approaches the creation of sustainable foods, by "cultivating the edge." The edge where crops grow is where plants must grow the hardiest and where a lot of experimental horticulture takes place. Also, with many berry-type plants, the edge is where they produce the most fruit.

Larmer compares this permaculture theory to the women who she saw practicing it. Larmer (2016, 94) states, "explained through edge theory, they [the permaculture farmers] are a uniquely adapted 'species' that survives because of and contributes to the diversified, messy environment they inhabit." The relationship between these farmers and their methods of growing reinforces permaculture ideals. The women involved in Larmer's (2016, 96-97) research enjoyed physically touching the plants and being careful stewards to their land, they therefore resisted mechanization.

Just as the women found in permaculture resisted mechanization because they enjoyed the connection to nature, transformative civic agriculturalists in Furman, Roncoli, Nelson, and Hoogenboom's (2014) article have a different approach to farming which works to their advantage. Furman, et al. (2014, 69) explain that the 'civic agriculture' farmers in their research were either embracing incremental or transformative civic agriculture. Incremental approaches are intended to gradually change the existing system in place to become more sustainable.

Transformative approaches "embrace a systems perspective that integrates farm enterprises with ecosystem services." Furman et al. (2014, 70) find that local farmers who are using transformative approaches are better equipped for climate change. They "seek to emphasize the adaptive potential that can be unleashed by value-driven, community-embedded transformative approaches to sustainability." This shows how these transformative farming approaches may influence the overall community of support built around that farm.

Eight Types of Farm Diversification:

1. Introduction of nontraditional crops
2. Utilization of variety of marketing and merchandising activities
3. The integration of recreation, tourism, and hospitality enterprises
4. Lease, rental, easements, and timeshares of farm and resources
5. Farmer and rancher contract services
6. Value added diversification
7. Historic preservation
8. Education and consulting

Figure 5: Eight Types of Farm Diversification (Barbieri and Mahoney 2009, 60)

One strategy to reach success in local agriculture is found in building a community of support, another is found in diversification of crops grown, animals raised, or goods sold by the small farm (Figure 5). As Barbieri and Mahoney (2009, 60) explain, "farmers close to urban fringes diversify to help to compensate and allow them to pay for property tax increases resulting from nearby residential developments." According to Barnes, Hannson, Manevska-Tasevska, Shhrestha, Thomson, and Iantbruksuniversitet (2015, 410) there seems to be a "causal link between diversification and income viability status." Through diversification, farmers are better able to sustain their profits yearly.

Another type of strategy to ensure sustainability of the local farm-and-food system is supporting an alternate currency within the farmers' market. Isidor Walliman (2015, 80) suggests using a form of alternative currency to keep money within a community. The alternate currency promotes local identity and strengthens local industry. Walliman writes about the Social Economy Basel, an organization that tries to strengthen communities through bottom-up support, encouraging communities to produce all that they can locally before going beyond the area. The exchange currency they use helps to connect volunteers to projects and the local currency can offer discounts to incentivize use. Even without a built-in system of exchange, having alternate currency to show membership to an alternate food system serves many purposes beyond offering alternatives to cash payments, such as marketing and building community.

It is apparent that the consumer is a valued part in the current system of sustainable agriculture. Although food trends can backfire against their purpose, as is shown in the proliferation of organic foods in the industrial market, this trend to sustainably grow food paired with farmer connectivity to their consumer seems better equipped to fight the prevalence of industrial food. In places like Texas, where local government may at times hold more sway than federal, it may be to the benefit of the community to have its most affluent citizens invested in this local, sustainable food. Eleanor Shoreman-Ouimet's (2011, 248) description of Middle-Out Conservation in the Mississippi Delta Region (discussed on pages 50-51) is a possible pathway to bring greater local food access to DFW. To explain, the most affluent local citizens' demand for local food helps to solidify the presence of local farmers, and the presence of loyal and reliable customers helps farmers to expand the amount of food they grow and the area that they serve. Understanding the need for support and viewing alternative solutions as entry points to

build accessibility and policy support of local food are both commonly found concerns in local farm-and-food activism today.

The future of food is uncertain. As diverse groups of new peasantries, cultivators of the edge, civic agriculturalists, and others come together to solidify this second wave of alternative food, questions turn to how these farmers and farming in general will continue. With populations higher than ever before and climate change already affecting crop yields, the time to evaluate alternative solutions is upon us.

2.2 Theories and Methodology

The paradigm, or approach to the research question, used in this research is referred to as the critical paradigm. As LeCompte and Schensul (2010, 62) explain, "critical theorists suggest the truth resides in and is created through relationships of power." As is noted in exploring research on foods produced using GMOs (page 38), when different sources of information conflict, finding the truth is difficult. Looking initially to the power structures present in relationships between groups involved helps to shed light on the truth. For instance, it may be unclear why the prices that consumers are paying for certain foods are so high, or why farmers have such a hard time making a living. However, when considering the power relations between food producers and consumers, or between farmers and food producers, one can see that the power over food cost is held in the hands of the food producers.

Although looking to power structures helps to make sense of relations and how they change, without a proper delivery, the findings of my research are lost to misinterpretations and assumptions. The delivery of this research is presented in the spirit of Geertz's (1973, 9) use of Thick Description to interpret culture. To summarize and simplify, Geertz shows how perceptions of behaviors or relations as 'normal,' such as body language (a wink), are culturally

embedded, and what something may mean in one context may not be fully understood in another without a *thick description*. Geertz (1973, 9) concludes that "analyses, then, is sorting out the structures of significance." In this research, the way local food is valued is analyzed from the side of growing and raising it, as well as accessing and consuming it. To deliver this research, a thick description of many aspects of the local farm-and-food culture is necessary.

Theories in anthropology are ways of evaluating the research question; they are used to develop the research question and offer analytic approaches to investigate it. Theories help remind anthropologists of the behaviors and relationships which others have attempted to explain that may be taken for granted in daily life. Sometimes theories perfectly fit the question, and sometimes they must be changed or more fully explored to link to research today.

2.2.1 Capitalistic Commodification

To understand the values that local food farmers and their consumers place around the foods that they grow and sell is to evaluate how local food is commodified. The theory of commodification originally comes from Marxist political theory. Commodification, at its most basic definition, means that an object is assigned an exchange value in addition to its use-value. According to Castree (2003), commodification theory is used often by researchers, however the meaning is sometimes lost through generalizing the theory. I agree with Castree's (2003, 275) assertion that "capitalist commodification means several things and [theorists should] attempt to scrutinize these separately rather than assimilate them to some overarching conception." Castree explains that for capitalistic commodification to occur, a specific process occurs around the item's exchange and production. This will be better explained through an evaluation of food using Castree's examples.

The aspects of capitalistic commodification may exist separately outside of capitalism,

however altogether, Castree (2003) asserts, the combined aspects describe the way commodities are created under capitalism. Castree outlines the ways that capitalistic commodification affects use-values; in privatization (279), alienability (279), individuation (280), abstraction (281), valuation (281), and displacement (282). Individually, changing a use value happens in any item's history due to whatever cultural symbols that object may take, however through these six affections, a capitalistic commodity is created.

Privatization was one of the first steps of colonizing the Americas. As Castree (2003, 279) defines it, "privatization refers to the assignation of legal title to a named individual, group or institution. The title gives more-or-less exclusive rights of the owner to dispose of that which is named by the title as they wish." With privatization, food began its journey to commodification, because as land was privatized, and plantations grew, foods that were developed as cash crops began to be known through reference to a particular plantation or region instead of a food.

With alienability, an item can be transformed from its origins. According to Castree (2003, 280), alienability is "the capacity of a given commodity, and specific classes of commodities, to be physically and morally separated from their sellers." Industrial food was physically and morally separated from its agricultural beginnings through branding and marketing. Consumers became unsuspecting of methods used to grow foods, and so they were separated from moral judgments of food production.

In individuation, something is divided from its original context. Castree's (2003, 280) examples of this show how a complex entity is broken into its singular parts to be more easily bought and sold. While individuation in food may be harder to see, examples are in being oblivious to what a tomato plant looks like while being able to spot a tomato, or in not knowing

what animal a certain cut of meat comes from. When food is individuated, its natural connection is severed.

Abstraction is a way to explain the want for a perfect apple mentioned in the introduction (page 3). Castree explains that "it is a process whereby the qualitative specificity of any individualized thing (a person, a seed, a gene or what have-you) is assimilated to the qualitative homogeneity of a broader type or process" (Castree 2003, 281). The individual characteristics of a variety of apple are no longer what is valued. Through abstraction, an apple in a grocer is not supposed to look so much like a specific variety of apple as it is supposed to look like the perfect idea of what an apple should be.

Valuation is the aspect of commodification which is most greatly evaluated in this research into the local farm-and-food system. Castree (2003, 281) notes that "one of the key things that characterizes capitalist commodities is that their worth is measured in terms of labour value – even though it appears that their value is intrinsic rather than assigned." The seemingly intrinsic value of a commodity in capitalism creates a perception that valuing an item for any reason other than its capitalistic value is somehow incorrect. As will be seen in the Discussion chapter, it is possible for an item to reclaim its original non-commodified value, through an explanation of its original or contemporary use value.

Finally, displacement happens when the true value of an object is disguised or distorted and unknown. Castree's (2003, 282) examples of displacement refer to how an end-user of a product does not know the true history of how that product came to be. As some food critics have pointed out, in industrial food, there is no connection between the hands that eat the food and the hands that touch the food to pick it. Displacement in food means that there is no

knowledge of the tribulations of growing a crop or raising an animal, or the process it goes through to land in the hands of the consumer.

These six changes combine to create a capitalistic commodity. The journey to the commodified industrial food of today began in the early 1900's, when there were food safety concerns. Food was commodified partially because through purchasing food from a corporation, people were also buying the safety of the food from that company, or they were buying into a brand (mentioned earlier on page 32). As Appadurai (1986, 8) points out, "in order to produce not mere products but commodities, a man must produce use values for others, social use values." Through branding, the perceived safety of a food became a use-value beyond simply eating it.

The way a food is regarded also says a lot about the food system itself. In C.A. Gregory's 1997 book, *Savage Money*, he points to the way that values are formed. "Values involve both the *is* and the *ought*, the fact and the norm. Values determine the question posed, the mode of description, the evaluation of that description, and the normative judgments that follow" (Gregory 1997, 7). Although food today is still created for its original use-value of feeding a hungry populace, it may be said that the greater importance placed on industrial food production is to create an exchange value around that food, creating food that is marketable so that it will be purchased.

Food has also changed its use value for those in power. Due to the way capitalism works, farming foods that can be grown and fed on a mass scale ensures that those who are in control of the food system remain in place. As Patel and Moore (2017, 143-144) summarize,

> Capitalism's agricultural revolutions provided cheap food, which lowered the minimum-wage threshold: workers could be paid less and not starve. This in turn reduced employers' wage bills as the scale of proletarianization increased, allowing the rate of

> exploitation to rise. Accumulated capital could continue to grow only insofar as a rising food surplus underwrote "cheap" workers.

The cycle of business and national growth became linked to food production when the use value of food changed for those in power.

An example of the way commodities are controlled is found in the bottleneck of power (previously discussed). According to Appadurai, "problems involving knowledge, information, and ignorance are not restricted to the production and consumption poles of the careers of commodities, but characterize the process of circulation and exchange itself." The control over both sides of the system by the food corporations in the middle serves to sever the connection between agriculture and eating through displacement.

Despite these many explanations of how industrial food has been commodified, many still look to industrial food as having a preferable taste. Taste in the form of the personal experience of eating has become quite different through the commodification of industrial food. In *The Extraordinary Science of Addictive Junk Food*, Michael Moss (2013) illustrates how industrial foods today are not only created to make the act of eating as simple and brainless as possible for the consumer, they are also engineered to have the best "taste" through sampling consumers and designing the foods. Moss (2013) shows how sugar goes a long way today to creating foods with the most optimal "taste," with the added bonus (for the food corporations) that sugar is addictive. But foods are not only designed to be have the ideal sweetness level, they are also designed for optimal texture, crunch, and mouth feel, among other things. Through surveying consumer's experiences in eating the foods that have been created, food companies are able to determine the most inexpensive way to produce foods that are hard for most consumers to resist.

The point of this explanation of the commodification of industrial food is that although it

seems that industrial food is not connected to industrial agriculture, that cannot be further from the truth. It is only through commodifying foods that food corporations retain the perceptions that they have created. By removing the history and identity of a food, the act of purchasing the food is purely economic, without a concern over the efforts or relations that went in to creating that food. In effect, the creation of an industrial food system keeps the food service workers and farmers in their continually failing role, with the consumers paying for it through these perceptions of preferable taste and profit saving advantage. Appadurai's explanation of demand best explains the truth behind what is happening:

> Part of the reason why demand remains by and large a mystery is that we assume it has something to do with desire, on the one hand (by its nature assumed to be infinite and transcultural) and need on the other (by its nature assumed to be fixed)…I suggest that we treat demand, hence consumption, as an aspect of the overall political economy of societies. Demand, that is, emerges as a function of a variety of social practices and classifications.

Commodification happens through the reification (or making into something different from its original) of a value placed on an item. Castree (2001, 1521) explains fetishism as a type of object-centric focus of values found in capitalist societies. As he explains, "the social character of private labour is expressed in the thingness of commodities…commodities are not just goods available for exchange (compare Appadurai 1986); rather, they are things that at some or all stages of their sociospatial biographies, are subject to the logic of 'accumulation for accumulation's sake' within a market framework" (Castree 2001, 1521). Fetishism, according to Tanner (2001, 57) is when social interactions are created around a commodity through severing its history and creating a purely economic transaction. In food, this fetishism can be seen in the wasteful nature of our food system, in the lack of rights and respect given to the workers within it, in the uneven monetary gains found throughout the system, and in the outside expense of the damage to health and to the environment not present in the prices of industrial foods. Tanner

goes on to explain that to overcome fetishism, the relations between the people involved in the transaction must become one of social solidarity.

A way to look beyond the economic transaction in an item is to explore its history. According to Castree (2001, 1520) “defetishisation does important critical work” by looking behind the production of an item to its true value. While there may be limitations to the use of defetishisation, Castree (2001, 1519-1520) points to the fact that defetishisation problematizes capitalist commodities, and that works to get people to begin to think about a commodity differently. When we use the process of defetishisation, there is much to be learned about a society and the roles of all the people involved in creating those commodities.

Sugar is a prime example of a food that has been subject to capitalist commodification, and the explanation of its history shows how defetishization works to show ways to critically think about foods. The early days of the Colombian Trade were not without their multiple values placed on foods. As Sydney Mintz (1985, 78 & 88-90) traced the history of sugar; its original use was as a preservative or medicinal. That was replaced by royal bakers transforming it in French court to produce works of art. As sugar became more accessible, it also became a popular way for those in control of the industrial factories to keep their workers feeling able to continue to work (Mintz 1985, 35). As sugar became more generally used in foods, its ability to cause people to want to eat more of a specific food caused its proliferation throughout the food system. Once the reification of an item is complete, it is naturalized, which means that the alternate value which has been placed on the item seems to become its original and only value. The original progression of sugar’s use values are easily forgotten today.

The history of eating sugar shows how it progressed into our diets through becoming more accessible. The consequences of sugar infiltrating the industrial diet reach beyond lowered

nutrition and greater worker manipulation. Throughout history, the farming of sugar shows a different consequence. As mentioned earlier, African slaves in the triangle trade were brought to the Americas to work on sugar plantations. When sugar cane is harvested, it must be processed quickly to get the sugar from the cane, and the process is quite labor intensive. Slaves on plantations were used to not only grow and harvest the sugar cane but also extract the sugar and process it for shipping (Mintz 1985, 36, 78.) Once the Civil War ended, black slaves tending sugar plantations became black sharecroppers, as Hollander (2006, 286) explains, "the idea that only blacks could cut cane was never seriously questioned, but the geographical origin of suitable black labor was." Black sharecroppers were perceived to be better suited to farm sugar cane due to their history farming it as black slaves. Hollander (2006) and Llana (2018) detail this racialized history of sugar workers and show how their mistreatment has not only reinforced institutional racism but has been blatantly violent and horrific in the past. The preferential flavor that sugar brings to the consumer is at odds with the reality of the processes taken to make it, its historical relation to abuse, and the effects it has today on health.

The commodification of sugar in industrial food today represents another use value beyond Sydney Mintz' progression. Sugar in today's American industrial food system is used in virtually everything, including bottled water. However, the excessive use of sugar is increasingly questioned in the US public sphere. Albritton (2010, 346) poses the idea that sugar may be as addictive as alcohol and then points to how sugar is indoctrinated into the American diet from essentially birth. Sugar is used in industrial food so that consumers appreciate the flavor of whatever food they are eating, so that they will come back for more.

While capitalist commodification shows how the link between food and farming becomes severed through a transformation of values, there are other ways food and farming may be

commodified to reify its worth. The commodification of the farm itself through the creation of agritourism is a new form of commodification within the food system, and the transactions around the commodification of the farm remain those of social solidarity. Brandth and Haugen (2010, 35) suggest that having visitors to the farm is no new idea, "what is new is the process of commoditization, the scope and variety of activities and the increased demands on the hosting role." Farms may be changing to host people for different reasons, this process of commodifying farms is working much differently than capitalistic commodification, although the values of capitalism are still present.

The real key to agritourism revitalizing the small farm is that the small farm offers a certain type of farm experience that larger industrial entities are unable to capture. The small farm, in the traditional or the contemporary sense, has a culture unto itself. Agritourism is helping to capture this culture in a commodified manner, however this process of commodification has little in common with the six affects that transform an item in capitalistic commodification. By commodifying the small farm, farmers with mixed methods, hands-on activities, and animal interaction offer something that larger, more industrial entities cannot.

2.2.2 Ecological Anthropology: TEK and CAEK

Commodifying the small farm through agritourism brings consumers onto the farm. Having visitors to the farm is not a path to success if the farm itself is not growing and raising animals in a successful manner. Success for North Texas local farmers does not exist without the ability to withstand the harsh climate and extreme weather events that happen in North Texas.

Ecological anthropology is the study of the relationship between people and nature, and how people adapt to their environment. Kottak (1999, 23) explains that ecological anthropology "attempts to understand and devise culturally informed solutions to such problems/issues as

environmental degradation, environmental racism, and the role of the media, NGOs, and environmental hazards in stimulating ecological awareness and action." Through understanding how people interact with nature and the outside world, their adaptations become evident.

The study of ecological adaptations becomes more complex as our understanding of ecological systems grows. Capra (1982, 3) defines ecological systems as "ecosystems, in which networks of organisms are interlinked, together with various inanimate components, to form an intricate web of relations involving the exchange of matter and energy in continual cycles." As Capra observes, the combination of rational thought and a working knowledge of the nature of the environment create a specific type of adaptive knowledge.

As more academics began to see the value in this adaptive knowledge, they began to observe that some adaptive knowledge is passed down through generations and exists as a form of scientific knowledge; the term traditional ecological knowledge (TEK) became used to describe these systems of knowledge. Berkes (1993, 1) explains that "traditional ecological knowledge (TEK) represents experience acquired over thousands of years of direct human contact with the environment." Today, TEK is applied to many fields, such as tracking ice formations in the North Pole, or in identifying different types of insects and varieties of species.

TEK has been lost in many places today through population growth and a loss of cultural traditions through colonization or dilution. Gómez-Baggethun, Corbera, and Reyes-Garcia (2013, 72) evaluated ideas of eroding TEK systems and found that there also exist "places that having captured, stored, and transmitted through time the knowledge and experience of managing a local ecosystem and the services it produces." More importantly, they found that "the dynamic nature of TEK is sometimes achieved through the accommodation of new forms of knowledge," (Gómez-Baggethun, et al. 2013, 72). This means that not only are cultures

preserving and passing down TEK, but that they are incorporating new knowledge into their contemporary understanding.

Climate adaptive ecological knowledge (CAEK) is similar to TEK, CAEK is a body of knowledge that exists in much the same way. CAEK is regionally specific and uses a mixture of agricultural adaptations and empirical testing to generate successful production. It incorporates learning about adaptations on a global scale through virtual, printed, or live connections. CAEK involves the combination and iteration of numerous methods and the use of technology to reach more exact adaptations. In some ways, CAEK and TEK are the same, because the climate adaptations that are used may be traditional knowledge that has been passed down for generations. However, with the information age, the process of sharing and learning information is different and no longer exists solely as an heirloom within cultural knowledge. With CAEK, multiple adaptations generated from different sources of TEK could be used in combination in order to generate new farming applications.

With CAEK, many of the adaptations are learned from experts, through seeking them out or through information that is accessed without ever meeting in-person. Other adaptations are found through searching online and reading tutorials or watching videos. What makes this information applicable, however, is the empirical testing that follows in succession with the adaptations that are further combined to ensure success.

Additionally, the methods found in CAEK farming applications fit into the tenets of regenerative agriculture. As Rhodes (2017, 104) explains, “for ‘regenerative’ to be an accurate description of a product, it must be not only 100% recycled and recyclable, but also improve the environmental conditions at all stages of its manufacture and use.” For a farm to be regenerative, it must not only be sustainable, it must also positively benefit the environment. CAEK used in

farming follows the path to regenerative agriculture because it is through regeneration that farming methods, the conditions in nature, and farming's past failures present a path for farming to adapt and to continue to grow.

Some farmers create what seem like microclimates on their farms through permaculture or other regenerative methods, others build systems which enclose perfect growing environments to fill a niche needed in local food. Others look to plants that grow successfully elsewhere and use their understanding of both adaptation techniques and plant circadian and seasonal rhythms to create successful farms. When faced with challenges, many farmers do not know only one way of doing things, and they may try three or four adaptations to solve a single problem.

The Green Revolution, mentioned earlier, was supposed to revolutionize agriculture. However, as Rhodes (2017, 84-85) notes, "it is only through the input of large quantities of artificial fertilisers, pesticides, and adequate irrigation that these high yielding plants can flourish." A great problem in industrial agriculture is the crops reliance on inputs. Regenerative agriculture, on the other hand, has inputs which are all recycled through the system, and has beneficial outputs. As Rhodes (2017, 106) states, "natural ecosystem services are enhanced, rather than replaced, and the natural resource base is improved, not merely sustained."

The climate adaptive ecological knowledge that farmers in climates like North Texas develop in order to be successful is an invaluable resource. Researchers are already looking into adaptations found in areas suffering losses to their arable land from climate change. Research into modern adaptations found in historically harsh growing climates may be a pathway to help mitigate the losses to future crop yields that is threatened with climate change.

2.2.3 Finding a Local Farm's Place in a Capitalist Economy

The CAEK that local food farmers in North Texas possess is a form of knowledge which

helps them reach success, but its value is disregarded by consumers who do not discern the complex methods farmers use. For a local farm to find its place in a capitalist economy, the farm needs to establish a market base – a community of support that is loyal to the farm. While establishing community is important, there are other considerations to having a business in the neoliberal era. Combining both a community of support and the knowledge to navigate the bureaucracies of the state result in a farm finding its place in the capitalist economy.

2.2.3.1 Establishing a Community of Support

For local farmers to build a community around food, they need some type of authority with consumers. Pierre Bourdieu (1990) addresses the way power works in different situations, and how different forms of capital work to build authority. Bourdieu's explanation of *habitus,* different types of capital, and collective mobilization help to explain how the local farm-and-food community has been built in North Texas.

Bourdieu's (1990, 56) theory begins with *habitus;* which is the way we are all conditioned to behave and perceive different situations throughout life. The main concept with *habitus* is that it is an unconscious learned behavior. As Bourdieu explains, "The *habitus* – embodied history, internalized as a second nature and so forgotten as history – is the active presence of the whole past of which it is the product." A *habitus* is a person's social filter, or the sum of their experiences that guides them through every situation in life, through their memories, *habitus* leads to behaviors and beliefs in action.

Part of what affects a person's *habitus* is their own and others' perceived capital in a situation. Although there are other forms of capital that Bourdieu discusses; economic, cultural, and social capital were the types used to form the local food community in North Texas. Levien (2015, 80) explains, "whereas economic capital refers to control over material resources, and

cultural capital to acquired knowledge and credentials, social capital refers to "connections" that enable individuals to accrue material or symbolic benefits based on 'who they know'." These three forms of capital are overlapping and mutually dependent, they work together to determine a person's role or authority in a situation and influence their interactions.

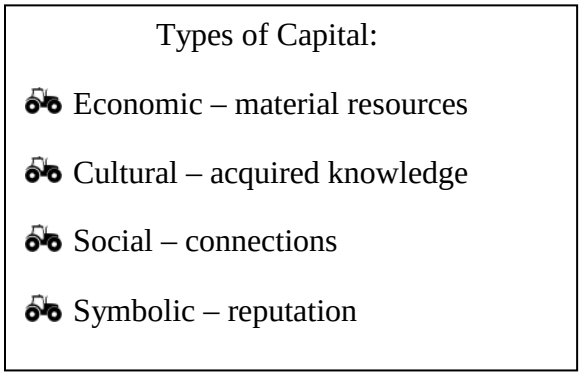


Figure 6: Types of Capital

Another form of capital which may be important to the formation of the local farm-and-food community is symbolic capital, or the reputation a person has as seen by others. As Bourdieu (1990, 119) defines it, "symbolic capital procures all that is referred to under the term *nesba*, that is, the network of affines and relationships that is held through the set of commitments and debts of honour, rights, and duties accumulated over the successive generations." Although Bourdieu's definition of symbolic capital amounts more to prestige, in practice, it can be explained as reputation. As the authority of the local food producers grows through their use of economic, social, and cultural capital, their symbolic capital also begins to take shape.

The cultural and symbolic capital which local food farmers have through their knowledge and reputation lends itself to creating authority. The commonality amongst the groups of farmers in methods and place in society creates a common *habitus* amongst the group, which helps them to work collectively due to the solidarity of their experience. Bourdieu's (1990, 59) explanation

of collective mobilizations helps shed light on how the local farm-and-food community comes together in North Texas. Bourdieu explains that "the practices of the members of the same group or, in a differentiated society, the same class, are always more and better harmonized than the agents know or wish." This harmony of practice is not so much on purpose within the group, rather, Bourdieu continues, "the *habitus* is precisely this immanent law, *lex insita*, inscribed in bodies by identical histories, which is the precondition not only for the co-ordination of practices, but also for practices of co-ordination." What this means is that people who have histories that are closely related end up with similar *habitus* which creates a harmony in both their actions and in their coordination of goals. Seen in local food, this explains much of the similar but different and overlapping value-systems that each farmer brings to the market and the common goal of the market (selling local food). This common experience that is bringing people from all walks of life to the same answer may also explain the reason so many people are currently coming to support local food, through their commonality of experience in the American industrial diet and in capitalism today.

Bourdieu (1990, 59) then shows how all of this culminates in the formation of a community; through "collective mobilization." As he notes, "collective mobilization cannot succeed without a minimum of concordance between the *habitus* of the mobilizing agents (prophet, leader, etc) and the dispositions of those who recognize themselves in their practices or words, and, above all, without the inclination towards grouping that springs from the spontaneous orchestration of dispositions." In other words, consumers who have similar *habitus* due to their life experiences give authority to local farmers in a 'spontaneous orchestration of dispositions' because of how they recognize their own values in the words and practices of the farmers, thus building the community.

Understanding the formation of the local food community in North Texas can be extremely difficult because there are so many different actors working together that seem at odds. Bourdieu's explanation of *habitus*, capital, and collective mobilization helps to show how local farmers can generate authority with consumers, and in turn generate community. The authority that farmers have with consumers is not their only concern, the rights of a farmer and their ability to conduct business under law is also a consideration of authority.

2.2.3.2 Farming in the Neo-Liberal Era

Turning from building community to look at a farm's navigation of the business world helps to show how the system around the farmer works. As is seen in the sections on Recent History and the Domination of Industrial Food and Capitalistic Commodification, the power of the entire industrial food system rests in the hands of the food corporations in the middle. An interesting aspect of the way the local farm-and-food system works is that the control, from agriculture through (in most cases) processing and sale, all rests in the hands of the farmer and their close network of support. The process of neoliberalization is evaluated to understand how farmers navigate the business side of farming and where that places local food farmers in the U.S. capitalist economy.

The local farm-and-food system exists in a much different form from how farms existed before the changes that came with the Green Revolution. These later days of capitalism have changed the way actors work together in the public and private spheres. Neoliberalization, as explained by Guthman (2008, 1172) is the "privatization of public resources and spaces, minimization of labor costs, reductions of public expenditures, the elimination of regulations seen as unfriendly to business, and the displacement of governance responsibilities away from the nation-state." At least, in theory that is what it is supposed to be. In reality, Guthman explains

that it is a much more ambiguous process that academics are trying to define. The process of neoliberalization is essentially the privatization of government structures wherein the government serves as the regulatory mechanism to a newly privatized service.

Looking at instances of neoliberalization in the food system, a farmer being labeled as organic is a good example which shows the many sides of privatization and licensing that the process of neoliberalization has created. As Guthman explains, "distinctive aspects of neoliberalization come together in various voluntary labeling schemes that use private organizations to certify to particular standards, giving consumers the choice to purchase particular social and environmental qualities as a form of regulation, which putatively shift value to those producers who meet those standards" (2008, 1174). Growing food organically is a private service and the determination of whether a farm fits the organic standard is also a private service, but the determination of that method of growing as organic is the regulatory duty of the government.

One consequence of this form of regulation is a type of "responsibilization" of the consumer. According to Guthman (2008, 1173) this responsibilization signifies a shift from the government's responsibility of providing public welfare to a consumer's duty to eat healthily themselves. It effectually veils other considerations of why a consumer would not 'choose' to eat healthy foods. One consequence of neoliberal responsibilization is that it creates a way for the consumer to be at fault for their own purchasing errors as opposed to their socio-economic status and other social determinants of health being considered as factors.

Food and farming are interesting considerations within the process of neoliberalization because environmentally, food which is grown regionally and farms which ensure the most earth-friendly processes (organic and sustainable) are preferable, and they serve to benefit the

welfare of the nation. However, for farms to truly reach that level of environmental stewardship, they must be kept to a size that is manageable for the farm owner to personally interact with their environment. In food and farming, the process of neoliberalization from a nationwide food system to local food systems which work independently but cooperatively may stand as the greatest solution to the defunct system of industrial farming we see today.

Going back to the idea of responsibilization; this perceived responsibility that a consumer carries also works as a selling point to make consumers feel that they are doing more than they actually are in purchasing a food. As Gunderson (2013, 115) points out, "shoppers no longer have to feel guilty about being the unreflective mass consumer who is unconcerned with the fate of the world…They can now continue shopping to save the world." The certifications in the food industry today work to ensure transparency and are a guarantee for consumers to know they are buying what they prefer. However, in some ways the certifications in the food industry today can be seen as a way to make foods 'new and improved' so that consumers will want to buy more of them. The pitfall of fetishization, or 'accumulation for accumulation's sake,' can easily become a concern.

Certifications and regulations are not the only effect the process of neoliberalization has on local food and farming. Guthman (2008, 1177) also points to the use of "entreprenerurialism and specifically the use of market mechanisms to solve problems." Solving problems in the United States works better for farmers who understand the processes, procedures, and applications found in government bureaucracy.

Local food systems can find ways to work within the government through grants or other forms of public funding to generate the support or infrastructure needed to solve problems. Funding through the federal government works in grant and loan situations to assist farmers in

projects that are detailed in the forms of applications and awarded to private businesses or farms based on a list of qualifications. These funding opportunities serve to benefit privatization through assistance in overcoming barriers and reinforce the process of neoliberalization through the detached and standardized approach of granting awards.

A local food farm's place within the structure of farming in North Texas, within the world of trade regionally, and within the nation is more understandable through looking at the process of neoliberalization. The way that this process works is individual to each farmer and their business, but it also shows the greater structure of U.S. society and how much agency a farmer has within it. A farmer's process of establishing authority and building community helps them to find the market base that will lead to a community of support around the farm. While a farm's place in the capitalist economy of today is often surrounded by additional business and marketing concerns beyond the concerns of ecology, it is interesting to consider where this complex world of farming to build a local food system may lead.

2.2.4 The Nexus of Change: Agroecology, *Ubuntu*, *Buen Vivir*, and Planetarization

Local food farmers in North Texas are beginning to develop local food farming into an alternative food system from the national industrial food system through a different commodification of food, the use of climate adaptive ecological knowledge, building local communities of support, and through understanding their own place of power within the larger structures of American society. The community that is created in the local food system in North Texas is a new form of community. It is hard to find areas where the type of unity found in North Texas local food farming has been discussed previously. Agroecology, *Ubuntu*, *Buen Vivir*, and the concept of Planetarization all capture some aspects of it.

Agroecology, to some, is the next step in sustainable agriculture. As defined by

Gleissman (2015, 1):

> in agroecology, we move from a narrow concern with farming practices to the whole universe of interactions among crop plants, soil, soil organisms, insects, insect enemies, environmental conditions, and management actions and beyond that to the effects of farming systems on surrounding natural ecosystems. Expanding this to a global scale, we see agriculture as the most intensive human activity on earth, which leads us to consider the overall effects of farming on the ability of the earth to support its populations of humans and other living things.

As Gleissman's definition shows, the considerations in agroecology are more numerous and encompassing than simple agricultural considerations and the approach looks at the bigger systems at play. However, this definition does not truly grasp the human relationships that are built to generate the community support that is necessary for sustainable local food systems to thrive.

Ubuntu is a word in Zulu (from sub-Saharan Africa) which cannot be directly translated to English, however it features the community support aspect of the local farming community. According to Benedetta and Margherita (2013, 3), *Ubuntu* is centered around "the individual and his community. Its main aim is to create and maintain a peaceful state of harmony and cooperation among members." This type of community harmony is the best way I can find to describe the cooperation within competitiveness that I found between local food farmers at the market, as well as local food farmers selling in different venues, and their approach to local food consumers and establishing a market base.

The local food farmers in North Texas do not all have the same values and they do not all grow or raise the same things. They do not farm for the same reasons and they sometimes may be at odds with their goals. However, through the community which is created in the local food system, the farmers and the consumers generate a harmony around the common goal of producing and eating food locally.

Although agroecology speaks about the agricultural approach and *Ubuntu* touches on the community aspect, neither truly captures the community of the North Texas local food system. *Buen Vivir,* which is Spanish for "good life," better captures all the values working together to form the local farm-and-food community. As Gudynas (2011, 441) describes it, *Buen Vivir* is the idea that "well-being is only possible within a community…the community concept is understood in an expanded sense, to include Nature." Although the idea of treating nature as a member of the community may seem out of place in today's world, it is quite fitting to local food farming due to the intense farmer interaction with their farm's environment. *Buen Vivir* considers the natural world as much more important to the strength of the community, but it still does not accurately capture the nexus of local food and farming.

Buen Vivir's focus on the benefits of the natural world, community, and the environment as a member of the community does not capture the considerations of health and well-being inherent in local food, or the aspect of increasing the value of the local area through keeping money local, the preservation of history and tradition through farming methods as well as preserving plant diversity through the varieties planted and seeds saved and exchanged. The best description I can find which represents how all these values are layered in their importance to the local food and farming community and the individual members' systems of value is through a process of planetarization. Escobar (2011, 139) explains, "the evolving pluriverse might be described as a process of planetarization articulated around a vision of the Earth as a living whole that is always emerging out of the manifold biophysical, human, and spiritual elements and relations that make it up." Escobar's explanation of the multiple concerns over the earth and its many emerging relations helps to capture the interwoven values and considerations of local food farming.

The nexus of values that is found in the local food and farming community is difficult to describe. The value systems found at the market do not conflict with outside values of capitalism or the transactional nature of the U.S. economy. The values do, however, add another layer of consideration – so that the values of capitalism stand in line with others and are oftentimes less important priorities. This shift in priority could be a hint at where communities are heading in a post-capitalistic world.

CHAPTER 3

METHODS

3.1 Initial design

This research was conducted from October 20, 2017 through December 18, 2018. It was designed to capture a snapshot of farmers who produce and sell their goods locally in North Texas. Farmer interview participants were selected to represent the array of types of farms found selling into local food markets as well as methods used in agriculture. Although farmers who sold at Dallas/Fort Worth area farmers' markets were sought, a few local food farmers who did not sell at the markets were interviewed due to interest in their business models. Local food and farm supporters were selected to represent an array of types of supports, such as farmers' market employees as well as local food consumers.

The client for this project, Sue Newhouse, owner of Aunt Sue's Barn, along with our contact at the Coppell Farmers' market, Amanda Austin, helped me to find interview participants by providing contact information from their network of contacts. Additional interview participants were found through attending area farmers' markets and using snowball sampling; through references from farmers who had been interviewed, and through contacting a few of my old family friends that I had known growing up. Interviews representing local farm-and-food supporters were found through attending area farmers' markets and through placing a call for participants on my social media pages and through group emails to a community garden in Denton, Texas.

Farmers were originally contacted to inquire if they were interested in participating in research about local farming in the area. As previously mentioned, to qualify as a local farmer, a farmer would have had to sell their goods in the Dallas/Fort Worth metroplex, at a location

within 150-miles of their farm. Thirty-six farmers were contacted, however only 17 of those contacted were interested and available for interviews.

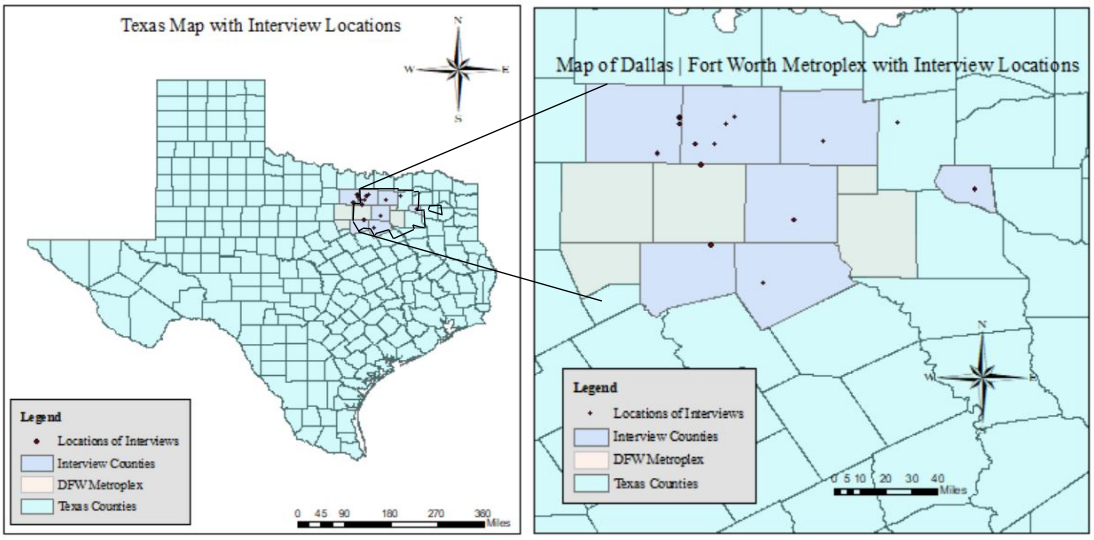


Figure 7: Texas Map and Map of Dallas | Fort Worth Metroplex with Interview Locations.
Source: Esri, TomTom North America, Inc., U.S. Census Bureau, U.S. Department of Agriculture (USDA), National Agricultural Statistics Service (NASS)

People who support local food were found through searching for customers of farmers' markets. Although there are more communities beyond the farmers' market that support local food, such as chefs, exploring those communities was beyond the scope and time constraints of this research. Local food and farm supporters were generally interested in being interviewed, except for families with young children, which will be discussed in Demographics. Four out of the nine local food and farm supporters were both customers and supporters, purchasing from as well as working within the local food system in some way.

The initial design of this research focused on understanding the emic, or inside, perspective of local food farmers through interviews, however the methods used to collect data quickly transformed into a first-hand experience. According to Schensul and LeCompte, 2013, to conduct true anthropological research, referred to as ethnographic research, one must be truly immersed. Schensul and LeCompte (2013, 1) write, "immersion involves socialization into the

rules, rituals, practices, beliefs, activities, organizations, and daily life schedules of those whose lives are the subject of study." At the outset of this research, my plan for immersion was to attend a many farmers' markets as I could.

My research became refocused to be more holistically immersed while my research proposal was being approved by the Information Review Board at the university. When I originally met my research client, my husband and I were looking into purchasing an eight-acre property to start a small farm. As my research proposal was being reviewed, we were bidding on and purchasing our new home. While we did not really know what direction our farm was headed, this move ended up being instrumental to my interview design, and beginning our own farm greatly contributed the quality of my interview observations and follow-up questioning. Developing a holistic understanding of local food farming requires in-depth evaluation of the life of a farmer, and my complete immersion in this life became a part of how I could come to understand how these local food farmers view and achieve success.

One difficult idea to gauge early on was what makes area farmers successful. To create a standard view of success within the group of participants, the farmers interviewed were asked to define what success means to them before determining for themselves if they were successful. According to LeCompte and Schensul (2010) to make a term like "success" into something more concrete and actionable, it needs to be operationalized. LeCompte and Schensul outline how "operationalization involves figuring out what observable or measurable elements can be defined that signify the presence of what the researcher wants to study" (LeCompte and Schensul 2010, 148). To find the elements that make farmers successful, I first had to create a picture of success.

As mentioned earlier, the real problem found in operationalizing how local farmers define success is that success varies depending on each farmer's value-system. Through

attempting to operationalize the term success, I was able see how values play a role, not only in determinations of success, but in motivations to farm, in the methods chosen to farm, and in the type of market that a farmer wants to sell their produce into, not to mention the value-systems linked to consumer decisions around food. Due to this, a single standard of success was impossible to attain. Rather, success was explored through looking at values and the goals to attain success.

Interviews with people who support local farming were designed to understand the motivations and barriers to their support. These interviews were designed to help me understand how the local food and farm supporters interact with the local food system as well as their personal beliefs about local food. This side of the research interviews follows the network paradigm, explained by LeCompte and Schensul (2010, 73) as focused on "the social context of individual life and the recognition that people almost never act in isolation; rather, they are influenced by people in the groups to which they belong and with whom they interact and communicate." The values found in the community of support help to better explain the actions of local food farmers.

Through evaluating the network supports of local food, possible value systems and other points of common belief became apparent. This was done through asking interview questions focused on understanding why each person would choose to purchase local food or otherwise support a local farmer instead of purchasing food from a national market or national food establishment. It was important to understand each local farm supporter's history, in addition to their purpose in choosing local foods, because value-systems reflect lived experiences as well as beliefs. Each local food supporter was also asked about their history with gardening, agriculture,

and engaging with local food in order to further understand their motivations in participating in the local food system today.

3.2 Observations and Interviews

Observations and interviews were conducted with area farmers on location at their farms. Although farms were toured, and farmers explained their farming methods to me, I did not participate in actual farming activities due to both the training that may have been required as well as not knowing whether approval from my university's Information Review Board was required to participate. These farm tours had different results depending on the season, as the winter tours were performed while the ground was fallow and there was much less to see.

Observations were mostly carried out as a form of education, with the farmers taking me on a tour of their farm and showing me their methods, while I asked as many questions as I could think of about how and why they choose those methods. It was during these farm tours that my personal knowledge of farming methods was crucial to developing and expanding the observation part of the interview. Observations were also made upon approach to the area farms, as I was accounting for the growth and development in each area.

Interviews were carried out before or after farm tours, based on the farmer's designation of what would work best for them. Although many farmers were quite busy with their daily farm activities, they all set aside at least three hours to meet with me for the tour and to be interviewed. After being interviewed, several farmers commented on how they had not thought on the topics we discussed in years, and a few related to me that the interview questions helped them to develop some new goals for their farm or themselves.

Participant observations and interviews were conducted with local food and farm supporters both at farmers' markets and in private locations after meeting at a garden or a

market. These observations were largely participatory as I wanted to experience the market or garden in the same manner as the participant. The interviews with local food and farm supporters were usually less than an hour long and gave them the opportunity to speak about their motivations for supporting local food. Observation was also carried out independently by visiting area farmers' markets without local food and farm supporters, to see how farmers received customers and observe how other people interacted at the market.

Additionally, I attended a three-day conference aimed at supporting independent family farmers, which addressed both achieving success in business models as well as in agricultural practices. The conference also focused on farming regulations; the barriers that they create and possible solutions to them. Through attending this conference, I was able to further understand other sources of profitability to local food beyond diversification or farmers' market sales – such as chef sales, the development of different types of food hubs, marketing development, community growth, and ways to generate collective power to help create supportive legislation, among other things.

3.3 Participation

As I mentioned earlier, at the same time this research was in development, my husband and I purchased a home where we have begun to create a small farm. Since beginning this research, I have also participated in local farming through the development of our farm. The past two years were spent doing so many activities related to managing our farm that I never thought I would do.

We began our farm with four large Boer goats and one Nubian goat. This entailed building fences, repairing barns, learning to care for livestock, daily health checks, cleaning

stalls, trimming hooves, giving shots, worming, and giving pills. I also gained an understanding of assisting in birth, treating wounds, and training animals that I did not know could be trained.

I learned that a cattle dog or a herding type dog is a danger to livestock, and the dog we had gotten to be our farm dog would only work as my personal farm companion. I learned what a livestock guardian dog is, and we rescued our Ak-Bash / Great Pyrenees mix from a dog shelter. To explain the difference; a livestock guardian dog lives with the livestock and protects them as the dog's own pack while a herding dog is used to herd livestock that are being moved.

We soon added ducks. We built a coop and learned to keep them safe and clean, how to care for their feet, how to ensure they are healthy, and how to gather and clean duck eggs. Ducks do not lay their eggs in a nest, they just drop them in the yard, so searching for pearl colored mines became a morning ritual. Before we added the ducks, I was convinced that I disliked poultry. After six months, I decided ducks are fantastic and I wanted to get more.

Last summer, we added to our farm with another few ducks, a beehive, and some rabbits. For the bees, I began attending meetings to learn regional practices (beekeeping requires local knowledge), I learned to split a beehive and add a new queen, and I learned which flowers to grow to make honey taste better and which ones ruin the flavor. The rabbits have been the only addition that required very little learning, I have learned only that they cannot eat iceberg lettuce, that their nails should be trimmed regularly, and how to worm them.

Additionally, I learned a lot more about the cultivation side of farming. I have always been someone who has houseplants, even when I did not have a home. During this research, I tried to learn as much as possible about cultivation through exploratory research, by participating in a local community garden, reading books on market gardens, looking online for guidance on permaculture and other growing methods, and taking the advice of many of the farmers that I

interviewed. This helped me in planting trees, composting, designing gardens, understanding crop rotation, seeding fields, planting cover crops, building soil, and figuring out which insects are beneficial.

The reality of daily life on a farm is that there is no end to the amount of work that needs to be done and the number of projects which are constantly underway, because the farm itself is a micro-environment which needs constant support. This year, I intend to learn to milk and care for our newest addition, a Dexter cow who recently had her bull calf (she was pregnant when I began writing this), as well as milk one of our goats. I plan to plant other foods that will feed us and to learn to process and store those foods so we do not lose our harvest. I plan to plant foods that will feed our animals and keep them thriving, and to build more fencing to create more fields to intensively rotational graze our livestock. Our farm has yet to make a profit, but in the upcoming year we plan to participate in the local food market.

3.4 Demographics

The farmers who participated in this research reflect the ages and overall demographics of the USDA's figures from the 2017 Census of Agriculture. According to the USDA, a farm is defined as "any place from which $1,000 or more of agricultural products were produced and sold, or normally would have been sold, during the census year" (Vilsack and Clark 2014). Although the farmers matched the statistics closely, there was a greater participation in this research from those new to farming, as will be discussed.

The census statistics show that overall, white male farmers make up the majority of those in farming. Female farmers represent a total of 36% of all producers, and 29% of all operators on farms nationwide (National Agriculture Statistics Service 2019). Although the 2012 U.S. Census of Agriculture highlighted the growing diversity in farming, with Hispanic operators showing the

greatest increase (National Agriculture Statistics Service, 2014), the actual populations of minority farmers are not representative of diversity in farming overall (see figure 8).

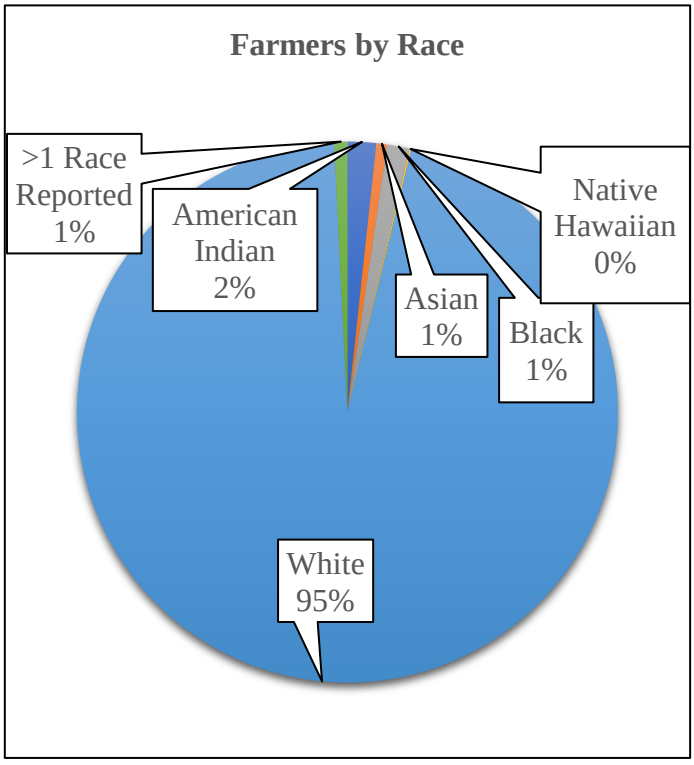


Figure 8: Producers by Race (United States Department of Agriculture 2019)

The average farmer age in the 2017 Census was 57 years of age, showing a slight increase from 2012. According to the 2017 Census of Agriculture, 8% of farmers are under 35 years of age, 58% are between the ages of 35 and 64 years, and 34% are over the age of 65 years. The USDA 2012 Census of Agriculture Highlights also stated that the number of new farmers is decreasing, with the number of new farming operations opened since 2007 decreasing by 20% (National Agriculture Statistics Service, 2014).These numbers are representative of an overall aging population of farmers in the United States.

The local food farmers in North Texas who participated in this research have ages closely aligned with the USDA census' national averages (see figure 9). Although the ages of the farmers who participated in this research align closely to the national averages. The number of

women who participated in these interviews are also a close match. With seven women and ten men who participated in farmer interviews, women represent 41% of this data, compared to 36% represented in the national average. The women who were interviewed were primarily operators on farms with their husband as their co-operator, however two of them were the sole principal operators on the farms.

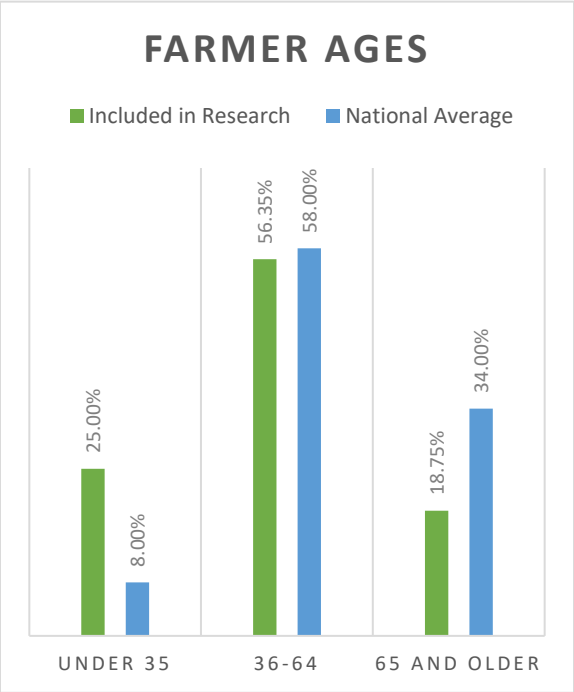


Figure 9: Farmer Age Comparison

Diversity may be increasing according to the Census of Agriculture Highlights, but as stated while looking at Farmers by Race, overall diversity is lacking in farming. Only two out of the 17 farmers who participated in this research represent minorities. Those two farmers are representative of 13% of the farmers included in this research, whereas the national average shows that all minorities make up less than 5% of farmer representation nationwide. The reason for low diversity in farming may have several answers. As Dethloff and Nall (2010, 16) mentioned; since 1980, working in farming in Texas mainly relied on most of the farmer's income coming from outside the farm. Farming became more easily attainable through either

having a spouse who is gainfully employed or through being employed in a manner that provides the flexibility necessary to farm. While keeping the focus of this research on the local farming community, it is important to note that in North Texas, the white, majority population historically has been able to attain more powerful (and moneymaking) positions within society. Most of the farmers who participated in this research (10 out of 17) had some form of income or support beyond the farm to support their farming endeavors.

Lastly, four of the fourteen farms represented are new farms, or less than ten years old. It was purposeful to evaluate how new farmers establish their success and build their network of support, so the over emphasis on those new to farming is accounted for within the research. An interesting statistic for the USDA to evaluate in the future would be how many farmers who are new to farming enter the local food and farming community.

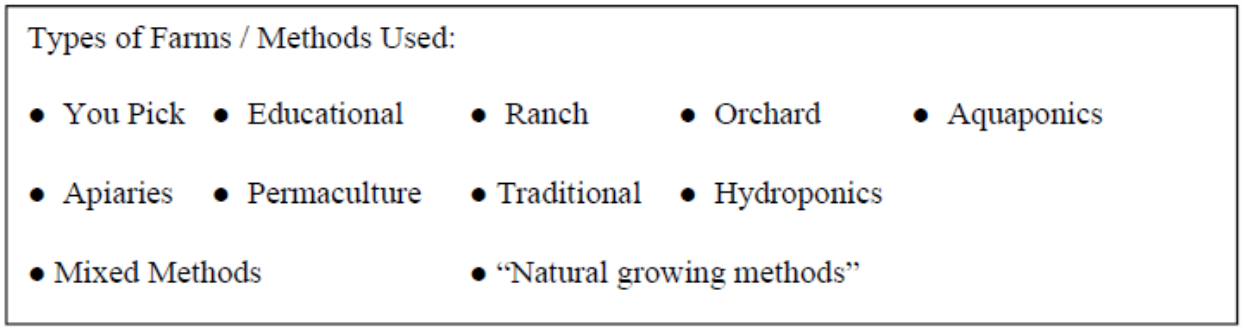


Figure 10: Types of Farms

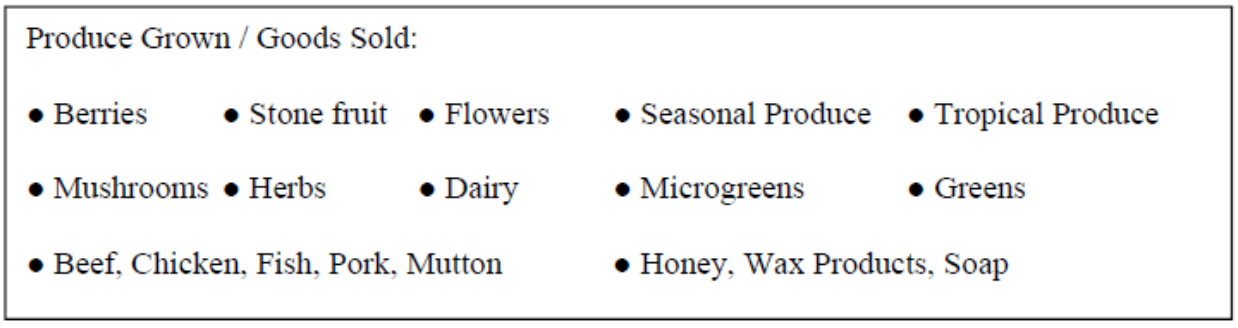


Figure 11: Produce Grown / Goods Sold

The types of farms represented in this research truly cover the breadth of types of farm,

farming methods, and goods sold in North Texas local food markets. These lists of types (figures 10 and 11) are not exhaustive, however they do cover the core goods and practices which I witnessed at these farms. It is important to note that many of the farms that participated in this research use an array of farm types and methods, and offer the goods sold in their fresh state and also a preserved manner; such as jams from berries, or dried herbs from fresh herbs. This creation of preserved goods is in accordance with the USDA's focus on the use of value-added products to support additional farm income. This value-added focus is exemplified in the USDA's Value-Added Producer Grant program which matches up to $250,000 of a qualifying farm's operating costs to create value-added farm products.

Comparative statistics for local food and farm supporters were much more difficult to obtain. I observed the demographics at the farmers' markets that I attended and have descriptions of those communities, as well as demographics for the local food and farm supporters who participated in this research. However, I was unable to find demographics from an outside source in North Texas, as farmers' markets in the area either do not keep track of this information or do not publish it for use.

There were three farmers' market locations that were visited. The first, the Coppell Farmers' Market, located in Coppell, TX is a producer-only market located in a town square which has eating and shopping establishments at the entrance. The market customers that I saw were mostly white, but there was some diversity. According to City-Data.com (2019), the zipcode around the market is primarily inhabited by white citizens, with some Asian and Latinx members, and very little diversity beyond that (see table below).

The second farmers' market attended was another producer-only market, however this one was in urban Dallas. The community itself was full of people who knew each other and

interacted frequently. Although I saw more diversity on both the farmer and consumer side of this market, it was still very minimal. Again, the demographics for the zipcode, according to City-data.com (2019) are primarily white, and this time with even less diversity (see table below) beyond a small Latinx community.

The third market attended was a producer-only and craft market in a local college town. Although the demographics here also show the same levels of diversity (see Figure 12), albeit in different minorities, the market itself was not very diverse. With this market being in a city with two universities, the hours may be too early for some of the college students.

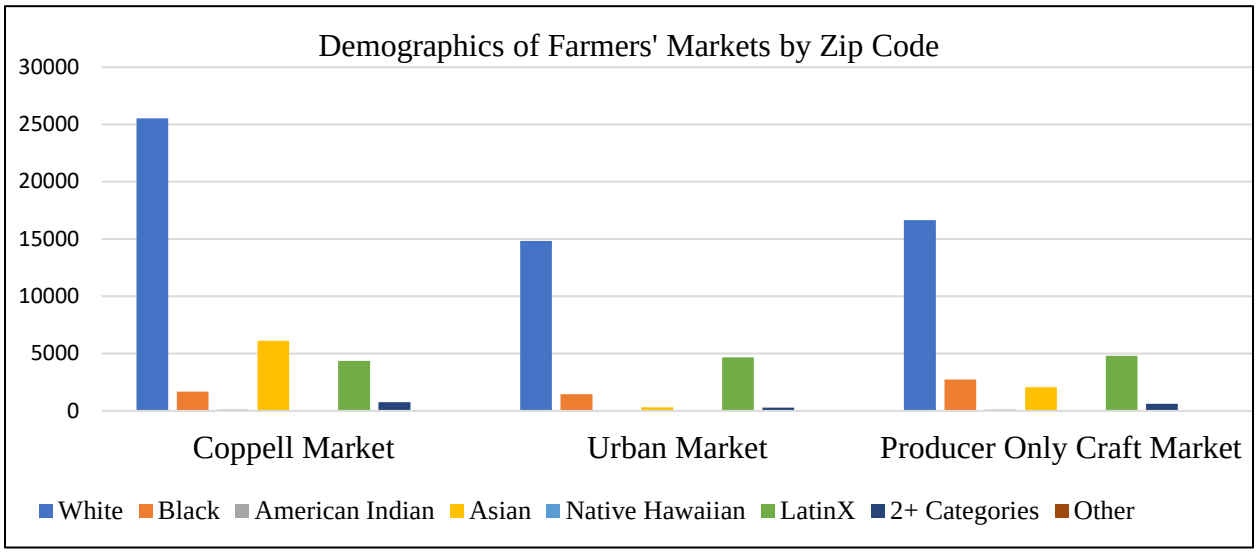


Figure 12: Demographics of Farmers' Markets by Zip Code (Citydata.com 2019)

Zepeda (2009) analyzed the characteristics of farmers' market shoppers through a random consumer survey of 956 adult shoppers nationwide to generate statistics of who is shopping at farmers' markets. The survey resulted in a list of values that the shoppers were looking for in their food as the main difference, rather than demographic variables. Zepeda summarizes the results from the survey:

> FM [farmers' market] shoppers rank freshness significantly higher than non-shoppers and enjoy cooking more. FM shoppers were also significantly more likely than non-FM shoppers to choose nutrition and less likely to choose cost as the most important

> characteristics of food. …The overall picture of FM shoppers is of someone more concerned than a non-shopper about food quality and variety as well as health and wellness. Among the demographic variables, FM shoppers were significantly more likely to be female. However, there was no difference between FM and non-FM shoppers in age, education or race. The only difference in household composition was that FM shoppers' households had significantly more adults. (Zepeda 2009, 253)

The group of local food and farm supporters who participated in this research were all white and all were from the USA except for one man from New Zealand. Although I attended three separate markets, and did see other ethnicities in attendance, I was unable to gain interviews with any of those families. Another aspect of the minority groups that I saw is that they were all families, sometimes with older relatives like grandparents in the group, and always with small children. I was not able to get any interviews with any families with small children, whether they were minority or white, I think that time and attention constraints were the main factor in lack of interest in participating.

Six of the local food and farm supporters who were interviewed were female and three were male. Their ages ranged from 19 to 65, with three participants under 35, four between 36 and 60, and two over 60. Only one of the participants had small children (under five) at home, six of the participants were in family households and four of them were parents.

The links between local farmers and the local food and farm supporters who participated in this research existed in a continuum (see Figure 13). Two of the local food and farm supporters fell into all the categories, from being former or future farmers themselves to working in farmers' market management and being consumers. Two of the local food and farm supporters had either worked for an area farmers' market or for a local farmer as well as purchasing local food. The final five local food and farm supporters were local food consumers who regularly attend farmers' markets in the area.

Figure 13: Levels of Participation in Local Food

Finally, my own demographics weighed on the collection of this data. I am a 38-year-old woman. I have short, brown hair and no noticeable accent thanks to a few years of speech class when I was first in school. I am half Puerto Rican and half Irish. I am formerly a single mother, and today I am married with three daughters. Prior to farming, I worked at a motorcycle parts distributor, a musical instrument company, a motorcycle shop, I stocked magazines, I was a hostess, I worked in fast food, and a few other places. I returned to school at 30 to pursue the study of anthropology and food. I am new to farming and co-owner and operator on our farm.

In anthropology, the way a research question is approached and the theories that are used to help make sense of the world are often seen as important aspects of the research, both for the sake of developing ways to create understanding between different groups and to present the most objective account of the research. In other words, what I have experienced and what I have observed may not be the same if it were another person, because the way that they look at the

research question and how they evaluate their data may be different than me. Finding a way to explain those differences, in the end, leads to greater understanding.

My own way of interacting with others influenced much of this research. I do not hesitate to ask silly or even completely inaccurate questions and keep admitting that I do not understand something until I finally do. I find it best to embrace being awkward and somewhat wallow in it. I do not know for certain what any of the farmers that I interviewed really thought about me, but there was a definite need to find common ground at first, and work to feel comfortable in answering my questions. Having my own farm was helpful and learning about farming in my personal time made our discussions much more detailed, but without the decision on my part to accept that I may look foolish and to proceed anyway, a great amount of this research would not have happened.

3.5 Confidentiality

Anthropological research conducted with participants is normally practiced in a manner to keep the participants' identities as confidential as possible. This means that the participants are assigned pseudonyms at the outset of the research and their information is coded with the pseudonym from then on to help ensure confidentiality. Confidentiality is maintained to protect the participants from any negative impacts their participation in the research might create.

In the interviews that I collected with farmers in the North Texas area, confidentiality worked differently. Scheper-Hughes (2000, xiii) describes the "difficulties of balancing one's responsibilities to honest ethnography with care and respect for the people who shared a part of their lives and their secrets with me." She explains further how confidentiality can sometimes backfire, as her work was received by her participants with both contempt for exposing privately held secrets to the public and outrage at how the composite characters that she created to provide

confidentiality severed and mixed up several people's characteristics into one (Scheper-Hughes 2000, xvii – xix). Her account of how her work was received sheds light on the need for research participants to determine their own level of confidentiality in some research.

Many, if not all, of the farmers who took part in this research did so because they are proud of their farm and their methods. The local food farmers and local food and farm supporters who participated were asked during their interviews if they would like to remain confidential and in what manner the confidentiality would need to be maintained. Most of the farmers and many of the farmer support participants wanted to be included by name. Participants who did not specifically say to include them by name have been given pseudonyms in the data and their distinguishing characteristics have been generalized.

Confidentiality is still of utmost importance in terms of negative impacts. For this reason, there are areas of this thesis which still maintain partial confidentiality of participants, such as in discussion of polarizing social issues or critiques. In these instances, a general understanding of the idea or critique is portrayed, without the use of individual information.

3.6 Data Collection and Analysis

Data was collected using a Sony Handheld IC Recorder as well as in handwritten notes. When we met for interviews, participants were immediately told that I had a voice recorder with me and that it was turned on. They gave verbal consent for me to record, and later signed informed consent forms during the formal interview. Participants were also given copies of the informed consent forms so that they could later contact me or the university with additional questions.

I transcribed half of the interviews manually, and half using Temi AI transcription software. Interview transcriptions and field notes from participant observation activities were

then coded using Max-QDA research software, by reading through the transcriptions and identifying common themes. Interviews were coded according to farming methods, motivations to farm, ideas of success, and descriptions of communities. Once the data was coded, it was analyzed for common themes and theoretical undertones.

Additionally, maps were made of the interview locations using ARC-GIS, a geographic information system software which supports spatial interpolation and analysis of map and terrain information. There are two maps (feaured on page 81), one showing all Texas counties with the Dallas / Fort Worth Metroplex highlighted and a second map of the Dallas / Fort Worth Metroplex with individual interview locations specified. The software used to generate these maps was from Esri, and sources for the data used in generating these maps were Esri, TomTom North America, Inc., U.S. Census Bureau, U.S. Department of Agriculture (USDA), National Agricultural Statistics Service (NASS) (“USA Counties” 2019).

CHAPTER 4

EXPLORATORY RESEARCH

In order to understand how local farms are run, I first interviewed and toured the farms with the farmers, and they taught me about what they were doing. But my education did not stop at the close of the interview. Once the interviews were complete, I also read many of the books that the farmers told me that they were reading, watched or looked for the YouTube channels that they followed, listened to their preferred podcasts, and found out more intricate details about any interesting information that they shared. I did this as a meta-analysis of the available scholarship, in order to capture a more holistic understanding of the world of a local food farmer in North Texas.

Before continuing to analysis, there is a need to describe the actual farming and business methods that I saw happening at local farms. The farming methods that I saw being practiced on the local level stand in contrast to the industrial farming methods previously discussed in Chapter 2. The environmental benefits commonly discussed in local food usually focus on the reduced distance in shipping or different types of packaging used, not the actual methods which are occurring on the farms, or how these methods create more sustainable farms.

The preferred methods that local food farmers in North Texas use in order to find success are discussed in detail in section 4.2 Farming Methods. These methods are so expansive that I have extracted this chapter for research presentations as a Journal of Best Practices, to provide to interested audiences. The methods listed are not a guide to actual farming, a book or tutorial on farming is necessary for that. These methods are best practices and as such are ways to reach greater success or to ensure production despite some of the barriers encountered.

4.1 Terminology in the Local Farm/Food System

Many of the terms used in agriculture today may seem that they are interchangeable, however they all have specific meanings. Listed below are a few different terms and their meanings which were discussed throughout the interviews, the meanings listed are according to my own understanding of the terms as they were used by the North Texas farming community. This list is far from exhaustive.

- Local – meaning food which has been grown or raised within 150 miles if its point of sale.
- Sustainable – food which has been grown using resources which are replaced or can be replaced (i.e. food grown using manure and compost is from a renewable resource)
- Organic – food grown which has the USDA organic certification
- Natural Growing Methods – often used to describe food which is grown using organic growing methods without the certification, also used to describe food grown in a sustainable manner (discussed in section 4.3.2 Permaculture and Natural Growing Methods)
- Certified Naturally Grown – a program where farmers are certified as using natural growing methods, described as an inexpensive form of organic certification
- Mixed Farming Methods – indicating a farm that practices both livestock and vegetable crop or other mixed forms of production
- Permaculture Methods – farming methods designed to mimic nature and create a permanent source of food through cycling energy (discussed in section 4.3.2 Permaculture and Natural Growing Methods)
- Regenerative Methods – farming methods designed to leave the soil more regenerated, or healthier, than it previously was (discussed in section 4.3.8 Soil, Grasses, and Hay)
- Community – a group of people who all support the same cause – neighborhood communities, professional communities, and market communities were a few of the different types of communities that I encountered during my research
- Soil Amendments – Materials added to the soil to improve its condition, not only through the addition of materials which feed plants, but also materials that hold in water and help break-up clay soil

4.2 Description of Participants

Descriptions of participants are helpful to build an understanding of the diversity and richness of the North Texas local food farming community. All the farmers and local food and farm supporters who participated in this research could be reduced to generalizations and statistics of who they are and what their responses were, but that would be a great disservice to them and to this research. All the participants were quite different, although many of their motivations and methods overlap. It is also an injustice to them as participants to generalize the many talents each farmer brought with them to farming. For those reasons, I have provided snapshots of each participant.

4.2.1 Local Food Farmers

The interviews with local farmers were conducted November 2017 through December 2018. The interviews have been listed by farm in the summary below with a total of 14 farms described. They have been summarized in order of interview.

4.2.1.1 Aunt Sue's Barn: Owner and Primary Operator Sue Newhouse

Sue Newhouse of Aunt Sue's Barn must have been destined for Texas, because after experiencing her southern charm and genteel hospitality, it was quite a surprise to hear that she originally comes from Toronto, Canada. Aunt Sue's Barn was originally purchased to be a mustang ranch, however in 2007, when Sue planted her first blackberry bushes, the farm changed its focus to produce. Today, Aunt Sue's Barn grows blackberries, raspberries, strawberries, asparagus, peaches, apricots, seasonal vegetables, and most recently, seasonal fresh cut flowers.

In 1997, Sue originally purchased the farm, and by 2000, the barn itself was being constructed. Not a stranger to hard work, Sue began her life on the farm in 1997 with a truck, a

job in technology, and a great amount of debt, which she quickly worked to pay off. Sue's self-sufficient and independent character is apparent throughout the farm; in various projects, like irrigation system redesign according to crop selection, the slate floor in the barn rustically cut into the shape of Texas and laid by hand, or the former chicken coop repurposed for more growing space for flowers.

Figure 14: Young blackberries at Aunt Sue's Barn

Figure 15: Ripe Peaches at Aunt Sue's Barn

Sue has now left her career in technology and turned to work full-time on the farm. She and her husband, Brian, can be found at a few different farmers' markets in the area and they also host events on their farm, like You-Picks and Farm-to-Table dinners. One of the best parts about knowing Sue is her ability to quickly make suggestions to help with growing produce, designing irrigation systems, or how to economically think about making a business work.

Although there may be some farmers who are more competitive, Sue finds success through her vision of being able to produce an abundant crop of seasonal produce every part of the year, and her farm is well on its way to reaching this goal. She would like to find alternate ways to provide her neighbors in Ponder with goods and produce and to explore more diverse ways to help the local urban and suburban localities learn about and explore gardening and irrigation. Aunt Sue's Barn is also releasing a series of children's books, aimed to help children experience stories of life on today's farm.

4.2.1.2 Tree Folk Farm: Co-Owner and Operator Andrea Gorham

Tree Folk Farm, owned by Andrea and Matt Gorham, is a small urban farm providing mushrooms and seasonal fruits and vegetables. Located on the outskirts of Denton, a city on the northside of the metroplex, the farm is in a housing development with almost all the available land on the property under cultivation. They sell their produce to a nearby farmers' market, some chefs in Denton and Dallas, and a few local grocers.

When I arrived, the location of their home in suburbia and the "Beware of Dog" sign on the fence caused me to call Andrea to make sure I was in the right place. After reassuring me, she came outside to meet me before we toured the farm. Walking from the unassuming front of the house into the beautifully kept gardens at the back felt like entering a secret garden.

Figure 16: Rows of Lettuce at Tree Folk Farms

Figure 17: Well-kept Rows at Tree Folk Farms

Andrea is tall and slender, she has shoulder-length brown hair with sun-kissed streaks of blond and an easy-going demeanor. During our interview, Andrea pointed out that the farm was maintained through daily upkeep. Andrea's manner at our interview was laid back and unassuming, but it was easy to tell from the state of their operation that her and Matt worked to keep the farm running smoothly.

Andrea and Matt started down their path to Tree Folk Farms a few years before buying the farm property. They found they both have a great ability to grow food well and enjoy working for themselves and the land. The couple moved from Texas to North Carolina to

manage a farm for a group of landowners there. However, they returned to the area after a year with the goal of filling the niche of gourmet mushroom farming in local food, as well as to continue to grow quality fruits and vegetables.

The mushrooms are the only part of the farm that are not grown with permaculture techniques in the soil. Rather, the Gorham's knew the needs of growing mushrooms using natural methods, in a commercial manner, and they knew that was their goal, so they built a mushroom growing house for this part of their farm. From the outside, this house looks much like a shed or a single office at the back of the yard, however inside of it, the mushrooms are temperature and humidity controlled, growing in bags of sawdust on tidy racks. There are also processing stations to clean and package harvested foods, and a cooler to store them, positioned efficiently around the farm.

Today, Tree Folk Farm continues to grow and reach new goals. Last summer, as Andrea and Matt's young family grew by one, they hired their first part-time help on the farm and expanded to another farmers' market. They have also expanded to grow on the land across from their home, at their neighbor's request, to help to regenerate that land as they grow local food.

4.2.1.3 Arthur Downe Dairy | Arthur Downe Calf and Cow Operation: Retired Dairy Farmers and Owners Arthur and Darlene Downe

Arthur and Darlene Downe are the forebears of the local farming community in Ponder, TX. Arthur has now retired from dairy farming and runs a calf and cow operation on his farm. Meeting the Downes was one of the highlights of my research. Not only were they able to tell me the history of their farm and the local agricultural community, but their demeaner was positive and likeable. Even when discussing seldom remembered days of the past, their combined charm and synergy in storytelling brought their stories to life.

Arthur and Darlene live in a square, brick home at the end of a long drive, on a road with one other house. Their land has rolling plains, pecan trees, and a creek, along with a field of winter rye growing to feed the cattle. The first time I met Arthur, he had almost forgotten about our interview and he teased me quite a bit with his answers. At times I was not sure if he was being truthful or not; it took me the first hour of the interview to get to know his jovial demeanor. I am not sure what he was expecting, but our interview served to jog his memory. A few days later, Arthur called and invited me back to meet with him and his wife, Darlene.

When I arrived for my second visit, Arthur answered the door wearing hickory striped bib overalls and a matching hat. Arthur is a slight man with glasses and bright blue eyes. The years of laughter show on his face when he smirks slightly, which is the best way to tell if he is being sarcastic or making a joke. He had gone through many of his older items and had taken out milk machines (Figure 18) from when his grandfather was a dairyman, milk cans, and some other items that he showed to me and explained how they worked.

Figure 18: Arthur Downe's Milk Cans and Attachments

When we went inside, Darlene was sitting at their kitchen table. Darlene is a soft-spoken, well-poised, southern lady, with short, caramel brown hair and glasses. Darlene's kind, levelheaded way of telling the past is the perfect match to Arthur's memories of large events.

Together they hold memories of the past that cannot be found in textbooks.

Arthur was raised by a dairy farmer, and it was through this knowledge of farming that he was able to begin his own dairy. Arthur met Darlene at the Lonestar Drive-In in Fort Worth, back when carhops were still delivering food. Once they were to be married, Arthur wanted to quickly find a job that would be able to support his wife, and so dairying was his solution. In 1960, Arthur got a loan from the bank, with the help of his father, and paid $10,000 for thirty-five cows, four milking machines, and a 400-gallon milk tank. After eight years, Arthur had saved enough from this start to pay back the loan and put the down payment on the farm where they live today.

Through the years, Arthur and Darlene Downe had a dairy that usually kept 60 to 80 cows. These “small” dairy operations are almost unheard of today – now dairies either have thousands of cows or are smaller family farms with ten cows or less. With his work dairying, Arthur was able to support his family, raise his children, pay off all his land, and keep his farm running for fifty years.

The experience and knowledge that Arthur has, and he and Darlene’s memories of the past, are brilliant snapshots of a world that once was. A great amount of the history that I have included in this research is directly from their accounts of the past. Darlene works part-time in the city now, and she has done so for the past several years. Arthur still runs his farm today, driving around to check the grounds a few times daily and making sure the cattle are cared for, the fields are planted, and all the traps are clear.

4.2.1.4 Alford Family Farms; Primary Operator Michael Alford

When Michael Alford was growing up, he remembers his family driving to areas around Dallas / Fort Worth (DFW) to explore rural Texas. He was reflecting on this experience while

explaining to me why his family created Alford Family Farms, which was to provide this experience to other families in the area. I would have to agree with the vision of Michael's family's approach to exploring Texas. One of the hidden gems that I was able to discover in doing this research are the country roads of rural North Texas. Although I grew up in the area, I had never visited many of the towns where these farms are located. It was a pleasure to experience the rich culture and grand scenery of rural Texas during my travels.

Driving into Alford Farms, I could see the rows of blackberries tied to the trellis, placed neatly along the lines waiting for spring. Michael directed me past the You-Pick parking area and up to the main cabin. A clean-cut man with short, brown hair, a shaven face, and a quiet demeanor, Michael had let me come earlier than we had planned, due to the impending storm. While we were unable to tour the grounds, the farm view was quite beautiful, with rolling hills, lakes, and wooded areas of pecan trees. Small, disposable pots of irises lined the walkways, a clever idea for allowing customers to pick their own without damaging the plants themselves.

As we went into the visitor cabin for the interview, I noticed large bunches of onions, sitting on the kitchen island waiting to be planted. The barn was large and spacious, with a table for us to sit at for the interview, and a spectacular koi pond at the back of the room, which made the entire room peaceful with the gentle splashing of the swimming fish. Michael told me he has the koi pond as his hobby as he showed me the beautiful fish. Michael attended college for business studies, specializing in environmental studies. Once he graduated and began to work in the business world, he found his career interests drifting to working in the outdoors. Around the same time, his parents had purchased Alford Farms and wanted to turn it into a rural destination. Once Michael became the farm manager at Alford Farms, the image of the family farm became a reality.

Today, Alford Family Farms offers blackberries, blueberries, seasonal vegetables, irises, pecans, beef, pork, and chicken. Their produce is sold at four area Farmers' markets and to some restaurants in the area as well. The You-Pick at the farm is open seasonally and hosts families as well as groups looking for outdoor education. Alford Farms plans to keep growing in the future, not only in the varieties of produce that they offer, but also in the people that they are able to reach.

4.2.1.5 Nature's Circle: Owner and Primary Operator Deborah Terrell

Deborah Terrell, or Deb, is the owner and primary operator of Nature's Circle farm in Aurora, Texas. Working with her husband, George, Deb grows luffa (a type of cucumber), along with other seasonal vegetables, and she raises grass-fed cattle and dairy goats. In addition, her farm not only houses its own apiaries of honeybees, but her efforts to provide beneficial plants to her bees (especially in growing luffa) has led to the farm being a Certified Bee Friendly Farm and a Monarch Butterfly Waystation.

Deb greeted me when I parked and led me through the front entrance of her property and into the garden. She is a petite woman with shoulder length brown hair, glasses, and a knowing grin. Deb is social and outgoing and has had many different experiences in life that have made her open-minded and creative in both her relationships and her approach to farming. When we met, Deb had just retired and turned her focus to her farm full-time.

Deb followed her heart in pursuing agriculture, always having a fondness for nature and an ease with growing plants. When she was younger, Deb earned a degree in Agricultural Business and worked for the USDA and many processing operations and farms in order to explore her own understandings of the world of food and her place within it. Her path led her to work at different businesses, and she met her husband George through her work. Seventeen years

ago, when they bought the 14-acre farm in Aurora, TX, Deb knew that she intended to farm the land, however she was not certain of what she would grow.

Figure 19: A Hedge of Luffa Growing at Nature's Circle

Figure 20: A Bee in a Luffa Bloom at Nature's Circle

While growing luffa happened early in the farm's history, Deb went through growing Christmas trees and grapevines which she found did not fit her permaculture approach. Her luffa plants have always attracted a wide variety of beneficial pollinators, which led to her housing honeybees. The luffa that Deb grows is both a vegetable that can be consumed and a sponge, which can be used in crafting. After seeing their own cat's interest in playing with the luffa, Deb began to create cat toys from luffa which had been preserved into sponges. Deb has also created other items with the luffa sponges, like luffa longhorn hats and luffa pumpkins.

Later in the farm's history, while Deb was still working in business, her management of an Earth Day event led to the initial acquisition of the dairy goat, Chatty, on her farm. When she took on Chatty, Deb also immediately began to milk, twice daily. Once they began to acquire an abundance of goat milk, Deb and George began considering products that they could make with it. One day, while looking at the yak milk bones that their dogs love, George realized that the same thing could be done with goat milk, and they began to experiment with different recipes to create goat milk treats until Chatty's Gourmet Dog Treats was born.

Today, Deb's farm has been rebranded as "Nature's Circle" to better capture this story and history. Deb hosts tours at the farm which aim to educate both children and adults. The prolific way the luffa grows throughout her property creates a blanket of yellow flowers and greenery from June through November. Her bees, luffa, goats, and cattle draw lots of interest. Her original approach to farming, her many years of experience in agriculture, and her social nature make Deb an educator both on the farm and through various social media groups.

4.2.1.6 J.S. Ranch: Owner and Primary Operator James Sullivan

When I drove up to the J.S. Ranch, I could see several separate grazing pastures of heritage breed cattle and a stately barn at the end of the drive. The fenced fields were green and minimally stocked and the cows were friendly and docile. After the pasture at the front entrance, there was a shed used as a chicken coop where all sorts of chickens and ducks were grazing around the yard, happily pecking at the grass.

James answered the door after a few knocks, and we went inside for the interview. James is a tall man with straight, brown hair, a clean-shaven face and blue eyes. James is a retired businessman and his deep voice and pragmatic answers at first were intimidating, however after the first ice breaker questions in the interview, we settled down to an excellent conversation wherein James taught me a lot about the economics of farming.

James' perspective as a former business executive provided a raw way of looking at the numbers that not many farmers discuss, and his manner of explanation is more educational than judgmental. He does well to explain how to look at your product to be sure you are making a profit, as will be discussed later in section 4.3.9. Although James said he still has some things to learn when it comes to cattle raising, the economics side of this farm is clearly defined and choices, in that manner, are easier because of it.

J.S. Ranch does not currently attend farmers' markets but James does sell consumer-direct to an array of buyers. The dual-purpose, heritage breed cattle James raises are used for both meat and milk and they have not been bred commercially for size. At three-quarters the size of a conventional cow, these smaller cows need less area to graze. By maintaining a diverse herd with superior genetics, James is also helping to preserve the genetic diversity of the breed.

J.S. Ranch plans to continue breeding and raising heritage breed cattle for consumer-direct sales, as well as expand into meat-bird sales. James also plans to expand into vegetable crop production this year and may begin to sell his produce locally at farmers' markets. James particularly enjoys his role as a steward for his animals and land and his delight comes through in his animals' temperament.

4.2.1.7 Day Dream Farms: Co-Owners and Operators Jay Mimbo and Prisca Lisanga

It is hard to capture the energy and passion that Jay Mimbo and Prisca Lisanga convey when they are talking about their vision for Day Dream Farms. Jay is a strong, good-natured, and clever man. His years of military service, along with his build, make him stand tall and strong. Prisca, Jay's wife, is a beautiful woman with shoulder-length black hair that rings into curls and a wide smile that lights up her face. Between them, Jay and Prisca help to share their culture and community through the food that they grow and raise, and the way that they interact with and educate their local community.

Jay and Prisca originated from the Democratic Republic of the Congo; however, they are United States citizens and have been for decades. In 2000, Jay joined the military and he, Prisca, and their three children (two sons and a daughter) travelled with Jay's assignments. First, they were stationed in South Korea and Jay's friend there let them use a 5' x 15', two-lane parking space to begin growing the tropical produce that is a central part of their diet – beginning with

sorrel. Even in the early years, Jay and Prisca found another family interested in helping to support their gardening endeavors through buying some of their produce. After Jay was transitioned to Tennessee, the family moved to a 2-acre home and continued to grow vegetables, adding more varieties of tropical vegetables which they were, again, able to grow successfully.

As Jay was leaving the military, he faced the mental taxation that such a transition brings. For Jay, and many other veterans today, farming offers not only a way to build a business, but also a therapeutic way to navigate their own mental health. Jay and Prisca found the farm in Texas from their location in Tennessee and moved to Texas as Jay was leaving his active duty service. Once they arrived in Texas, Jay's days were filled with rebuilding the land that sat untouched into a farm. When I visited the farm just two years after this move, the untouched wild was unseen, and replaced with a small, mixed methods, active farm. The farm had chickens, goats, geese, a horse, and a large area designated for growing both seasonal vegetables commonly grown in the Unites States (tomatoes, peppers, and the like) and tropical vegetables, like amaranth, sorrel, and their primary focus, cassava.

The tropical vegetables grown at Day Dream Farms are so highly demanded by the African community that Jay and Prisca have not had to market their produce. Instead, the customers have pursued them, and knowledge of their business has spread primarily through word of mouth, and through their farm being in a suburban area. They also sell their produce at an African store and have built a relationship with the store owner there. Jay and Prisca are providing a demanded product to the community, and they are doing so with both the integrity in the purity of their product, and through selling it at a lower price than what the imported packages sell for in the market. As Jay explained, they grow it so that not only can they eat it and be healthy, but they provide it to their community so that they can all become healthier.

Jay and Prisca have tropical produce available and they also grow a variety of seasonal produce and love to host visitors for both education and seasonal You-Picks. Day Dream Farms values bringing education and produce to both their local and cultural community, but Jay and Prisca also strive to offer a product that is grown in a safe and healthy manner, to provide their community with a superior product.

4.2.1.8 Larken Farms Orchard: Owner Ken Halverson

Ken and Laura Jo Halverson at Larken Farms Orchard have been able to create a farm that, in a big way, works according to their schedules. At Larken Farms, the orchards are full of fruit and the seasonal vegetables are available from April through August. Ken makes sure that their beef cattle are bred so that they will be calving in February and March. This farm schedule allows Ken to pursue his other passions beyond farming; hunting and traveling with Laura Jo. Ken also finds the time in all of this to run a construction business and compete in triathlons.

When I arrived at the orchard, I first stopped at their Pick-Your-Own (or You-Pick) parking, however I was directed from there to Ken's construction office building further back down the driveway, beside the barn. The long driveway went through rows and rows of fruit trees before it ended at the construction office building. When I pulled up, Ken was talking to several people, directing them to their afternoon work before having the time to meet with me. Ken is a tall, stocky man with short dark hair and a mustache, and a stern look to his face that foretold his discerning demeanor.

Ken's approach to farming was using the same general information I had learned, but he used it in a way that was ingenious for his orchard. When Ken first planted peach trees in his Texas soil, he was told that peach trees do not grow in Texas. But Ken had experience with stone fruits when he lived in Colorado, and he understood how grafting the trees made them able to

grow in harsh conditions and that chill hours more than anything effect fruiting. He also knew that those chill hours could be used to his advantage in North Texas. All of this will be discussed further in the section on Orchards in Farming Methods.

Once Ken was able to grow his first tree and it started fruiting, he knew how to approach creating the orchard. Ken has planted rows of trees in groups of 500 to 1,000 yearly for 15 years now, and the different fruits in each batch of trees that he plants all have different amounts of chill hours necessary for them to grow. At Larken Farms Orchard, Ken's approach to planting rows using this method has created an orchard of ripe produce that lasts four entire months.

Larken Farms Orchard is located about halfway between Dallas and Austin, TX. Their farm fresh produce is delivered to customers in Austin through a local food delivery service. Additionally, Ken sells his peaches to two large area grocers. However, these customers are not at the heart of Larken Farms Orchard. Ken hopes to one day have the orchard focused on Pick-Your-Own events during harvest season, because those are the type of consumers he enjoys interacting with the most. Having toured the farm and picked my own, with Ken's guidance, I can understand the pull of the orchard – I have never in my life had a plum as good as the one I ate while I was there.

4.2.1.9 DFW Aquaponics: Co-Owner and Operator Loretta Messinger

DFW Aquaponics' origins show the power of community in action. The aquaponics farm started as a group on Meetup, an online service which helps groups to reach out to like-minded individuals and meet. They met to learn how to build an aquaponics greenhouse with very little investment. Once they had built the system and it started producing, a few members of the group, David Cohen and Loretta Messinger, saw their vision of a commercial aquaponic farm begin to turn into a reality. David and Loretta reimbursed the rest of the group for the original investment

and began their farm in 2017. In June 2018, David's son, Adam, took over David's part of the business and David retired.

Figure 21: Herbs and Chard in a Media Bed at DFW Aquaponics

Figure 22: Lettuce flats float like rafts at DFW Aquaponics

I met Loretta at DFW Aquaponics early on a Friday morning in June. She greeted me and introduced me to her husband who was working to harvest some lettuce for the upcoming farmers' market the following morning. Loretta is an upbeat, sociable woman who effectively taught me all about the workings of the aquaponics systems in both their greenhouses. She is tall and vivacious, with short, light brown hair that was pulled back to work. Prior to becoming co-owner of DFW Aquaponics, Loretta had discovered aquaponics and had built a system in her own backyard, as she put it, "I've always loved aquariums and I've always loved gardening. So, aquaponics is like the perfect marriage of my two favorite hobbies."

Loretta explained how they worked to maintain the system. Adam, and David before him, was the aquaponics system designer. Adam has a detailed understanding of how aquaponics systems work and was teaching a class in agriculture at an area school. Loretta also brought working knowledge of aquaponics system design, additionally she is a Master Composter and

has been a gardener all her life. Loretta's husband, Thomas, also works on the farm. He was harvesting the orders for the next morning while I was there, emptying the floating flats of lettuce, washing and packaging it all during the cooler morning hours and placing the prepared lettuce in the cooler before it could wilt. An interesting aspect of DFW Aquaponics' business design is that they plan their big projects as educational opportunities and host Meetup classes to both spread knowledge and meet project goals.

Before seeing the system, and experiencing the environment inside of an aquaponics greenhouse, I admit that I was a skeptic. I thought that trying to capture the natural world in such a way would cause the entire system to seem closer to a sterile lab than the natural world. When I arrived and saw the small property and two large greenhouses standing nose to nose at the far end, I am not sure of what I expected to see, but the idea of a secret garden beyond those greenhouse doors never crossed my mind.

Once I entered their first greenhouse, which was the community-built greenhouse, I had a moment of revelation. I had never seen an aquaponic system before I went to DFW Aquaponics, and when I entered with Loretta, I was struck with how inside of this greenhouse, the sounds of a river trickling and insects whispering, the smells of the growing plants, and the sight of the garden standing in the crushed granite caused me to feel a greater connection to the natural world than the outside environment with the sounds of cars driving by on the highway outside the lot. I soon learned that aquaponics systems use only 10% of the water a normal system uses and the particulars of how the system feeds the plants.

Through discovering aquaponics, I learned that it is possible to grow leafy greens in Texas. Additionally, although it may not seem the purpose of the system, the ability to reconnect to the natural world through having a system like this in an urban environment cannot be

ignored. DFW Aquaponics remains an education site, hosting classes focused on teaching others to build aquaponics systems and effectively convert waste to plant food. They sell their produce at up to four area farmers' markets, a local grocer, and several restaurants.

4.2.1.10 Chapin Farms: Co-Owners and Operators Mark and Wanda Chapin

It is interesting to consider how many times this research has intersected with my life, and only through the analysis have I found how many relationships are interconnected. Mark and Wanda Chapin from Chapin Farms represent numerous intersections with my personal history and this research. When I was young, Mark and Wanda lived across the street from our family home briefly before their family moved to Argyle, TX, to be further into a rural community. As I was searching for an interview with a local cattle rancher selling into local markets, as well as someone who grows hay, my mother reconnected with Wanda over social media. Not only did this interview provide both a cattle rancher and hay grower's perspective, but the timing of Mark and Wanda's move to Argyle in 1994, and of the beginnings of their farm in 2004 filled in the exact gaps in the history of agriculture in the area that I had been missing.

I first visited Mark and Wanda at their Argyle location, prior to them moving the farm more fully to their residence in Chico. At the Argyle location, with the way the trees created shade and the wind blew across the property, it felt much cooler than the outside rural suburbs. Wanda met me outside with their dog, Osa, and we went inside to see Mark. Wanda is a tall, fit woman with short, gray hair, a friendly face, and a wide smile. She is warm and honest, and sometimes helps to find the silver lining in Mark's pragmatic and sometimes blunt way of explaining the trials of farming. Mark is a tall, slender man with an open smile and enthusiastic demeanor. It is easy to see from the way he explains things that Mark is logical and economical.

Chapin Farms provides natural soil inoculants and grass-fed beef to local, direct consumers. Mark's interest in building soil health originated from their purchase of property to someday farm in the late 1980's. They found their soil unable to grow much of anything when they first attempted to cultivate it. Repairing their own soil led Mark to research natural remedies to build soil health, and this research led to Mark becoming an expert in the area, educating others about soil health and native grasses. Chapin Farms now offers an all-natural soil inoculant to help others repair their soil. Mark and Wanda also have a variety of native grasses that they grow to helps restore their land and to feed to their livestock.

While soil was the beginning for Chapin Farms, the cattle aspect of the families' operation emerged from their son's interest in 4-H. Through his winnings in 2004, he was awarded a 10-month old Red Angus heifer named Belga. The matriarchal heifer moved Chapin Farms in their new direction, and they have raised Red Angus beef cattle ever since (Figure 23). Through raising their own grasses to feed to the herd and closing the herd to reproduce internally without introducing new livestock, Mark and Wanda have been able to raise healthy beef cattle without the use of vaccinations or antibiotics.

Figure 23: Red Angus cattle grazing at Chapin Farms

Chapin Farms also went through a period in the early 2000's of growing organic produce and eggs, however Mark and Wanda related to me that it was too soon for the area. The consumer interest that they see across the metroplex today was not present 15 years ago. Ironically, the population growth in their Argyle location since then has caused them to move the business to a more rural community, right as the city of Argyle itself is focusing on rural ties and preserving its agricultural roots.

The Chico location of Chapin Farms stands as a testament to Mark and Wanda's persevering efforts to create their dream. Located on land that was settled in the late 1800's, but never truly developed, their barn and command station sit atop a hill overlooking a winding river that is fed from Lake Bridgeport. When I visited, it was wintertime and so the grasses were not growing very much, but all the red Angus cattle at the farm were well-fed and grazing around contentedly.

This location is on dry land and does not have access to any freshwater aquifers to tap into a well, so Mark and Wanda have developed a rain harvesting system that ensures their home will not be without water. They are building their own home, which embraces all the technology needed to make their lives easy, while also preserving the past through using reclaimed materials from both Wanda and Mark's grandparents' farms. In the past, Mark and Wanda have hosted walking tours on this land, where people interested come out to learn to identify different natural grasses and flowers.

Today, Mark and Wanda plan to reduce the size of their herd and turn their focus more directly to native grasses, and recently, ancient grains. Although Mark is aware of the hazards of the attempt to grow ancient wheat, his interest in experimenting is piqued and he looks forward to seeing what he can accomplish.

4.2.1.11 William Hartley Apiaries: Owner William Hartley

It would be remiss to have conducted research on the local farm-and-food system without including the perspective of a beekeeper because bees are such an important aspect of successfully growing crops. William (or Bill) Hartley, was an area beekeeper who specialized in swarm removal, and had been keeping bees for 34 years. Bill had seven locations across the metroplex and was growing his business through leasing apiaries to homesteaders.

Bill and I met for lunch at an eating establishment to conduct the interview. We had previously met through my interests in learning about beekeeping at group meetings in the area, and I learned that he was a mentor to the community. He was a rugged man with longish, gray hair, observant eyes, and a beard of gray stubble. Bill had a no-nonsense way of speaking and clearly had studied beekeeping vigorously.

Beekeeping is a predecessor to farming crops; Bill told me amazing facts about the history of bees:

> I think beekeeping tended to come before farming and beekeepers became farmers. The evidence for that exist in caves in southern France and Spain. They go back to Neanderthals where they painted [cave] paintings of beekeepers harvesting honey. Some of the first books, like the oldest hieroglyphs and the oldest pyramid; there's a whole room dedicated to beekeeping. And the Mayans, one of the few Codex that survived the Spanish, Mayan written Codex, was a codex strictly on beekeeping. So, my argument would be that we were beekeeping before we were farming and then it [farming] kind of came up with it.

Bill explained the short history of beekeeping in the area and how it has recently changed. In World War II, he said that there were more beehives than today in America, but as growing our own food changed, so did keeping bees.

Two years ago, beehives were added to agricultural tax abatements as approved exemptions in Texas, if they are maintained by a registered beekeeper. That, and a renewed interest in saving pollinators, led to Bill offering his hives and beekeeping services to family

homes. As he put it, “for the first time in 30 something years of beekeeping, instead of basically paying people to put bees on their land, they're paying me.”

Bill was growing his apiaries with the intent to reach four hundred and forty hives to transport them to pollinate the almond crop in California. Bees are in great demand in different areas of the country for temporary periods, beginning with the bloom of the almond trees in California. Professional beekeepers will hire out their hives to pollinate the crop, sometimes following the flowering of crops in an arc across parts of the west and northwest United States. Bill also grew queen bees to continually grow his apiaries.

After conducting our research last fall, I told Bill that I would contact him again once I had completed analyzing and writing up my conclusions. Unfortunately, spring 2019, Bill passed away before I had a chance to complete writing up the results to my research. His memory remains herein through the wisdom he shared.

4.2.1.12 The We Over Me Farm at Paul Quinn College: Farm Director James Hunter

The We Over Me Farm at the Paul Quinn College is a 4-acre urban market garden located in south Dallas. The farm grows seasonal vegetables and microgreens and raises chickens and bees. They sell produce throughout the year to chefs in the Dallas area, and at a producer-only farmers’ market. However, their real work, as the ‘We Over Me’ name suggests, is in community support.

Originally founded in Austin in 1872, the Paul Quinn College is the oldest historically black college west of the Mississippi River. The college was relocated to Waco later in the 1870’s, and then the college moved to south Dallas in 1990. By 2007, it was struggling to remain open. Its (then) new president, Michael Sorrell, immediately eliminated the football program and began to close buildings on campus that needed repair. He began to develop a business approach

to running and attending the college and looked for areas to increase fiscal stability.

The college itself works as a community while also interacting with the neighborhood within Dallas. Paul Quinn students all participate in a work college program, whereby they are required to work in a position that meets their interests and the communities' or corporate partners,' needs to both gain experience and reduce student debt and other outside expenditures through the college.

In 2010, community donors approached Sorrell with funding to build raised beds and start a garden on campus to help support the neighborhood which was a food desert with no access to fresh produce. The original donations to the farm were enough to build beds, install raised beds, and install a drip irrigation system. As the garden grew, it went through a series of farm managers and directors until it found the right fit with James Hunter in 2015.

When James began working as the farm director at Paul Quinn College, he transformed the community garden which was relying on outer community members into a working market garden that hosts and builds relationships with those interested members of the community. He also opened the farm stand at the college to help provide accessibility to fresh produce to the outside community and he got the farm involved in a program to sell produce at WIC clinics through a non-profit organization.

I arrived at the We Over Me farm on a hot August afternoon. James was working in the gardens when I entered the former football field area. The juxtaposition of the garden within the field, with the repurposed concession stand at the entrance, held both the memories of the past and the vision of the future in one brief scan of the area. The garden had freshly tilled soil in the middle, with rows of tomatoes, onions, and other vegetables around the beds on the side. The outside border of the field also had a greenhouse, beehives, a chicken coop, and other farming

equipment. James is a slender man of average height, with shoulder length, thick curly hair, and wise, blue eyes. James speaks quickly and answers questions in such a way that it is obvious that he is deeply invested in the world of agriculture and local food.

As James managed the farm, he envisioned developing the methods for the market garden to be run by any director, so that it remained a sustainable feature of the Paul Quinn community. James also mentioned that although they have done so much to increase access, such as recently lobbying with the community to get a grocery store opened in the neighborhood, he does not think their work is done. The We Over Me farm hopes to develop a system of local delivery soon, to provide fresh produce to those who are unable, physically, to make it to the farm stand.

4.2.1.13 Profound Microfarms: Owner Jeff Bednar

Profound Microfarms, located in Lucas, TX, is a remarkable farm to visit. Jeff Bednar, his wife, and two daughters, moved onto the small, 2.6-acre lot almost five years ago. At the time of our interview, the farm had two aquaponics greenhouses, with a third under reconstruction, and soil under cultivation as well. Profound Microfarms provides leafy greens, rare culinary herbs, microgreens, and edible flowers to select chefs in Dallas and Collin counties.

When we met, Jeff's team of employees had just finished having their lunch and were leaving the house to go back to the commercial greenhouse. Jeff came out a few minutes later after he had completed a phone call about some paperwork he had been filing. Jeff is a tall, lanky man with glasses, short red hair, and a beard. He is friendly and relatable and tries to build strength throughout the local food community, not just on his own farm.

The farm was formerly an orchid nursery before it sat uninhabited for several years. When the family first moved in, Jeff learned to build the hydroponics systems (which were originally aquaponic) along with becoming a master gardener and permaculture certified. The

greenhouses where the aquaponics systems were to be built were the Bednars' reason for interest in the property.

Figure 24: Horizontal Rows of Greens at Profound Microfarms

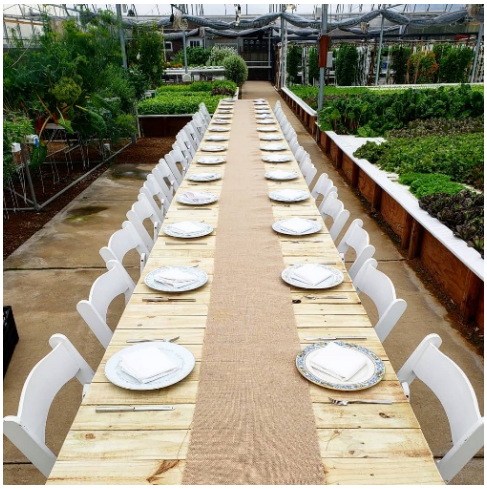


Figure 25: Profound Microfarms Farm-to-Table Greenhouse Dinner

When I toured in August 2018, the first greenhouse was open air, with a cloth cover above for shade. It was used to grow herbs and greens that require a warmer climate. Outside this greenhouse was an aquaponics garden and a soil garden and further back, along the side of the commercial greenhouse at the back of the property, was an open-air greenhouse with a wide variety of fruits and vegetables growing throughout.

The commercial greenhouse was a site to behold, with large pools covered with rafts of lettuce floating in them, towers of herbs and vegetables growing, along with horizontal rows to provide sturdier bases to vegetables that need it, like celery and Swiss chard. One of the greatest surprises, for me, was that the hydroponics greenhouses did not present the divide between built environment and nature that I was expecting to feel inside, they felt more like gardens than mechanical gro wing systems, despite the large, plated exterior of the commercial greenhouse.

Profound Microfarms has both full and part-time employees, and all the employees bring their own unique talents to the planting table; several are master gardeners and one, a trained

cook. One of the most notable characteristics of the microfarm is its investment into the development of community, within the team of farm employees, through local community engagement, and collaborations with other farms. Although Profound Microfarms sells its produce to top chefs in the area, it pursues a vision of developing a healthier community through also providing farm education tours.

With a focus on abundance, Jeff Bednar strives to create a microfarm that provides superior foods to discerning customers. With a focus on community, he educates tour groups and reaches out with ideas and direction within the local farming community. Finally, with a focus on the future of food, Jeff strives to be the example that he sees possible through creating a community of both consumers and sustainable farmers, working together in North Texas.

4.2.1.14 Rehoboth Ranch; Primary Operator Mark Hutchins

Driving up to Rehoboth Ranch as the sun was setting was an idyllic way to close already vibrant research. Sitting on 285 acres of rolling pastureland in Greenville, TX, Rehoboth Ranch is a family farm raising cattle, pigs, goats, sheep, chicken, and turkey in a regenerative method, restoring the land. Although the family farm has been in business since 2000, Mark and Hillary Hutchins took over as the primary operators in 2014.

I met Mark outside the family home, and we sat on the porch for the interview. Mark is a tall, brawny man with short dark hair and a friendly face. He is an eloquent speaker and it is clear that he spends much of his time planning for the future of the farm. His wife and three children are the main drive behind his decision to get into the family business, which is to raise them in the same environment that he and Hillary grew up in.

Rehoboth Ranch has been raising and selling grass-fed, organic, GMO-free meats to local consumers since 2000. Additionally, the farm works to regenerate the soil and maintain healthy

pastures through their rotational grazing and stewardship of their animals. As Mark's father was retiring from the business, there was a short time where their future was uncertain. Rehoboth Ranch was one of the original local farms in the area to support and inspire local food, and their loyal customer base is pleased that Mark and his family are taking over and continuing the family business.

Rehoboth Ranch strives to steward the land and raise animals in the way they were originally created to be maintained. Their name comes from Genesis 26:22: "And he removed from thence, and digged another well; and for that they strove not: and he called the name of it Rehoboth; and he said, For now the LORD hath made room for us, and we shall be fruitful in the land." It is in this ethos that the ranch was created.

Today, the Hutchins continue to provide quality meat directly to North Texas consumers and have recently expanded their consumer base into chef and co-op sales. They want to grow the business to explore different types of specialization in raising animals to better deliver a specialty product. While they want to help maintain and build their area consumer base, they are also interested in pursuing shipping and internet sales in the future.

4.2.2 Local Food Supporters

The community of local food supporters included in this research was restricted to farmers' market supporters for the sake of defining community boundaries. The interviews with the local farm-and-food supporters are listed in order of each participant's proximity to the farming community. Nine local food supporters' summaries are included.

4.2.2.1 Amanda Vanhoozier: Local Food Advocate and Blogger

Defining the boundaries of the local farm-and-food community through the local farmers' markets was quite difficult, until I met Amanda Vanhoozier. Amanda is a pillar of the local food

system and was involved in community gardening prior to founding the Coppell Farmers' Market in 2003. Since creating the market, Amanda has worked tirelessly to build support of the local food system. Just before our interview, she had retired from working for any market in the area to start her own brand which is offering consultation and support to the local food movement through her blog, Just Picked TX, her network in the food community, and her experience.

I had originally met Amanda during a market day. She was busy dropping by different markets around the metroplex so she could only talk for a minute, but she was willing to schedule an interview the following week. We met for coffee on a cool afternoon in April; Amanda had come from working in her garden. She had asked that I listen to her recent interview on Bootstrap Farmer Radio (Burton 2018) for background information prior to our interview. Amanda is a vivacious, hardworking woman with shoulder-length, light blond hair and a wide smile. Her blue eyes seemed skeptical at first, but her answers to my questions quickly took on an endearing quality and my interest only grew as she told me about the North Texas local food scene.

When she founded the market, Amanda knew that organizing a network of support took a sense of leadership which promoted leadership in others. As she explained:

> That goes for anything that you're trying to organize - a campaign or anything that you've got to bring the people in in the beginning and then they're the ones who are researching and finding out. So that's why this is such a strong volunteer market because that was the goal: to keep changing leadership meeting to meeting and everybody leaves with something to do, to bring back to the next meeting. So, everybody's got a buy-in to the farmers' market and that made that [commitment] real strong and actually there are people that still are on the farmers' market committee that were here in the beginning.

Amanda's understanding of how to increase value has been consistently favorable in establishing and growing the local farm-and-food community. Today, her brand is still active in supporting

the community and she is helping to develop a network among the Farmers' Markets in the DFW area, and in Texas. Amanda has also recently begun a new adventure, Bishop Hill Farm Flowers, where she provides freshly cut seasonal flowers to the local community.

4.2.2.2 Amanda Austin: Manager Coppell Farmers' Market

Coppell Farmers' Market Manager, Amanda Austin, was transitioning out of running her own farm for the past ten years when we met. Since she has started working for the Coppell Farmers' Market, her role as a farmer has changed to a local food and farm supporter. Amanda explained to me that she feels very fortunate to be in her role at the market, and it was obvious that she is diligent in her duties.

We first met during the market; Amanda told me she would be glad to meet later in the week to talk. A few days later, Amanda rushed in, right on time, explaining her limited availability as she excitedly spoke about the market. Amanda is a tall, energetic woman with chin-length brown hair and a dimpled smile. She is kind and optimistic, but also realistic about the trials of developing the local food system.

Amanda explained her role at the Coppell Farmers' Market. She is busy throughout the week, both organizing the weekly market and vetting farmers and working with outside business and governmental interests to keep the market running. She noted how the full-time work that she does is constantly demanding but also constantly fulfilling.

The Coppell Farmers' Market is a leading producer-only market in the area, and it continues to grow and deliver local food from the rural community. Amanda's work as manager is focused on continued reliability of market infrastructure and organizing specific market centered events like food days for kids, farmers' market week, and chef demos. Amanda said that

the market is now starting to speak to other producer-only markets in the area and started to work towards developing an informal network in the future.

4.2.2.3 Shaun Seibel: Library Production Associate

Shaun Seibel is a gardener who I met as a fellow member of an area community garden. I was glad that he responded to my request for interviews because I knew that he was knowledgeable about local native plants and had helped me with advice in the past. It was a surprise to find out during our interview that Shaun had also been a founding member of an area community market.

We met at the garden where we both had plots and had the interview on a warm April afternoon. Shaun was wearing a black beanie and a jacket when we met as the weather was still cool in the shade. He has a longish salt and pepper beard and blue eyes. As he explained his interests in local food and farming, I realized the many needs that are being met through the markets.

Shaun related to me that his interest in Farmers' Markets came from his childhood, as his family standardly purchased their foods at farmers' markets in Illinois. He said as an adult, he likes to go on 'Food Adventures' where he drives to unique food producers throughout the metroplex to learn about what they have available. Shaun expressed a different approach to how a farmers' market could build a community with a community market.

As Shaun explained to me, the market that he had helped to found was called a community market because it was both a producer-only farmers' market and a market for small craft businesses in the area. The community market helps to grow local businesses as well as farms, whereas other producer-only markets focus solely on the food aspect of the market. He

had worked as webmaster and on a steering committee when the market was originally founded, and still attends market days when his morning schedule allows.

4.2.2.4 Sean Durbin: Student and Farm Employee

Another gardener was Sean Durbin, a student and employee at a local food farm. I had not met Sean prior to our interview, and he requested that we meet at a permaculture garden in a residential area. Being able to see this farm waking up to life in the early spring was the unexpected treat of conducting this interview.

Sean had messaged me while I was working at the community garden and I drove over for the interview. I walked up to the front door as he walked out from the backyard. Sean is a tall, lean man with short buzzed hair and bright blue eyes. He is passionate about regenerative farming and imparted an eagerness to become a farmer himself in his responses.

Sean told me how his interest in farming had truly begun in the very garden where our interview was held. He related to me that his interest in ecology and pollution was what originally brought him to explore local food. He explained that seeing the food growing in the permaculture garden was eye-opening, and it made a fundamental difference to the way that he saw nature and his connection to food. Permaculture growing methods are so extraordinary because the garden itself is regenerative and, when correctly generated, can become so established that it must be manually destructed to be removed.

Visiting that garden resulted in Sean working at an area market the following spring, selling produce for the farm he works at while they have expanded to sell at another producer-only farmers' market in the area. He told me that even if he was not working at the market, he would still be attending, because of the value that he finds in supporting the local food community.

4.2.2.5 Additional Local Farm-and-Food Supporters

The additional local farm-and-food supporters interviewed were all consumers at area farmers' markets. Although their familiarity and interaction with the local farming community was on a minor scale compared to the supporters discussed previously, their unwavering support of the local farm-and-food system is exactly what is needed to create a sustainable community of support.

Luke and Mallory Kirkpatrick are a married couple living in Dallas and they attend their local farmers' market weekly. Mallory is tall and thin, with short, light hair and a playful smile. She works as a consultant and has an enthusiastic and clever demeanor. Luke is taller, with a closely cropped brown beard and blue eyes. Luke is a research analyst and it was telling during our interview; he would sit back and consider my questions before answering them, evaluating from all angles.

Mallory and Luke met me in their home, and we went to their market together after the interview. I found that although they live in an urban setting, their community around the market was tightknit. People interacted with us and everyone seemed to be familiar with each other.

A great amount of Luke and Mallory's support comes from their want to support the community locally so that it will thrive. An interesting aspect of this support is that the Kirkpatrick's feel that they have more of a direct connection to local food through the farm-to-table chef community than at the farmers' market, due to their more consistent interaction with chefs during visits to local eateries. Nevertheless, the couple strives to attend their local farmers' market faithfully for various reasons, but foremost amongst them is the desire to support the local community.

Beth Dods is an art director located in Fort Worth. She is a gracious, soft-spoken woman

with steely brown hair cut into a bob and a tireless smile. I met her in a workshop, and she mentioned her passion for local produce and then agreed to schedule an interview. We met for our interview on a cool November afternoon and sat beside a fountain on a park bench. Beth carefully considered each question and answered openly.

Her reason for attending her local farmers' market is her preference for local tomatoes, specifically the tomatoes from her favorite farmer at the market. Beth has been buying tomatoes from them for so long that they have developed a friendship, asking about each other's families and lives outside of the market. Although Beth said that during the winter, she is unable to continue purchasing tomatoes at the market due to seasonality, she assured me that during the spring, summer, and fall she purchases boxes of tomatoes weekly along with produce from other vendors.

Baker and mother of two, Zelda Grayson, attends her local community market regularly. Having heard about her frequency of attending farmers' markets from a mutual friend, I reached out to Zelda and she agreed to an interview. Zelda is slender and poised, with curling auburn hair and blue-green eyes. Our interview showed the perspective of someone who works with foods regularly and has discerning taste.

Zelda enjoys frequenting farmers' markets for the produce that she finds in the summer months. As someone who enjoys working with food, she tours the market to find the produce she would prefer most before making any buying decisions. Not only does Zelda prefer the produce at the market, but she likes the idea of keeping her money in the community. Being new to the area, she is not yet familiar with the farmers at her local market and would like to grow to know them more.

Brooke Martin was the final support participant interviewed; she is a young college

student who has been to her local community market several times. Brooke has long, dark hair, she wears glasses and has big, brown eyes and a wide smile. She is of average height and has an athletic build. During our interview, Brooke's environmental interests came through in the way she answered the questions.

Brooke prefers local food purchases from booths with less packaging and more variety. She enjoys going to farmers' markets for the variety and quality in produce that she can find, but also thinks that it is important for people to try to grow their own food. Brooke believes that farmers' markets serve a greater purpose in reminding people that they are not completely separated from nature.

4.2.3 The Final Participant: The History of Brown Sugar and Learning Lessons on the Farm

When my husband and I originally began farming, we started out with Boer goats. We purchased one different breed of goat along with our Boer goats. She was a Nubian named Brown Sugar (by her previous owner), and she came home with us because we were interested in learning to milk and were willing to take her. The goats moved to our new farm about a month before my research was approved to proceed. One of the most fascinating things that happened during my interviews with area farmers was that I was able to learn much more than I ever thought possible about the long life of Brown Sugar.

As it turns out, this crazy Nubian doe showed up at the Arthur Downe Dairy almost ten years prior to our purchase. During our interview, Arthur said that he had tried to find her original owner, but he was never able to. He did not raise goats on his farm, so he found a different farmer with goats to take her. At the time of our interview, I had no clue that this goat that he found was Brown Sugar.

That different farmer also happened to be another farmer that I interviewed, James

Sullivan at J.S. Ranch. James no longer had goats by the time I interviewed him. When he got out of goats, he happened to sell Brown Sugar, along with the last of his flock to another farmer. We purchased her several years later from that third farmer.

Brown Sugar has been one of the best animals I have ever met, and also one of our harder lessons farming. When we first got her, we had no clue how old she was, and we did not think that she would be much older than the others. Not thinking to investigate further, we let the buck breed her.

It was only a few weeks prior to delivering her kids that I interviewed James Sullivan and we figured out during the interview that his old nanny goat was my Brown Sugar. After talking to him, I realized that she was much older than we first thought, and our already watchful eyes became even more vigilant. It is good that we were there watching her, because I had to assist in the delivery of the first buck, and without our help, he would not have come. Brown Sugar had twin bucks that spring. The Boer goat's body frame is larger than a Nubian's, and the birth was doubly hard for Brown Sugar, because of her body size and her age.

Although Brown Sugar was not able to nurse her bucks, and our dreams of milking a Nubian were all for naught, everyone survived the birth. Unfortunately, we had another gut-wrenching lesson a few weeks later when one of her kids became bloated from the goat developer formula that we had been giving them as bottle babies. Although we rushed him to the vet, he did not survive. I found out a few weeks later that the best replacement for a mother goats' milk is regular cow milk, once the kid has eaten some form of colostrum. The worst lessons, I have found, are the avoidable losses, the ones that would have been easy to avoid if we had only known better.

I doubt we will ever find out Brown Sugar's true origins, or how she came to be on that

farm almost ten years ago. She had a rough life, in her past she somehow broke one of her horns (we think she may have been hit by a car), however she always seemed to bounce back to her healthy and hungry goat-self.

Over this past winter, Brown Sugar began to struggle to keep weight on. We had heating lamps on in the barn, despite how dangerous that could be, to try to help her maintain body temperature. One morning, as my husband went to feed the does, all of them got up to eat except for Brown Sugar. He watched the heat rise from her body in waves as the other does left to eat, and he knew something was wrong.

He came inside and told me, and I quickly ran outside and gave her medicine that is supposed to give her a jolt of energy. There was barely a reaction from Brown Sugar. We quickly decided that this was beyond our capabilities and that we would take her to the vet, as this doe had become more of a pet to us by this point. Brown Sugar spent her last day at the vet, wrapped in blankets in a heated room, warm but unable to maintain body temperature for herself.

Although Brown Sugar did not make it through last winter, her long life and the experiences of her past can stand to illustrate an important aspect that I have found in the local food and farming community. There were many times when that old doe could have been brought to the sale barn and eliminated as a burden, but because of her hardiness, her docile nature, and the possibility of production, the local farmers would have rather treated her as an asset than a liability, and passed her on to other farmers who could find a way to increase their own profit through her care rather than end her life.

4.3 Farming Methods

This section could be a book unto itself. Due to the array of methods to be included, a summary of each method will be provided with further examination into adaptations used by

individual farmers. Although my interviews with farmers were in-depth and farming methods were explored in detail, my knowledge and experience with these methods is still elementary. The methods listed herein stand as the best practices that each farmer showed me used on their farms to be successful as local food farmers.

4.3.1 Market Gardens

Market Gardens are fruit and vegetable gardens which are grown for the purpose of sale at a market. There are a wide variety of gardens possible, some farmers plant seasonal vegetables or flowers, while others have perennial crops like grapes, raspberries, or asparagus. During the warm seasons, some farmers have figured a way to grow tropical fruits and vegetables as well.

4.3.1.1 Seasonal Fruit and Vegetables

Many of the farms with market gardens grew seasonal fruits and vegetables. To grow seasonally, farmers explore what varieties they would like to grow and the planting times according to their planting zones. Many farmers would start seeds inside earlier than the listed date to have more hardy seedlings when it comes time to transplant. They may test or amend their soil a few weeks prior to planting seedlings so that it is ready to feed the plants. Seasonal vegetables are also planted with a cover of mulch on their base to hold in moisture. Although growing vegetables seasonally still runs the risk of an adverse weather event or prolonged drought affecting crop yields, most of these farmers have found ways to minimize those effects through their farming methods.

Andrea Gorham at Tree Folk Farms told me that they use a vermicomposting system (using worms) to turn their chicken and goats' manure into compost, and this closed system of inputs ends up saving them in the long run. As Andrea put it:

I think, because it's not an input that I have to go and buy over and over and over again,

> it’s building. So, it’s getting better with every little thing that I put in and eventually it’s going to reach a point where it’s built up. What’s nice about – like the, the animals that we have, they’re cyclical. Like, they’re going to eat the grass and they’re going to make manure and that just [will happen]. And also, producing the mushrooms, a lot of the mushroom blocks will turn into compost, so that goes onto the garden beds. And so, everything that kind of comes off, there’s something else that goes back in.

In this manner, the farm is not only using natural growing methods in producing the crops, but there are fewer overhead costs because they do not have to keep purchasing soil amendments.

As James Hunter from Paul Quinn College explained, growing seasonal vegetables on a budget requires evaluating inputs every step of the way:

> We think about integrated pest management and we think about the bottom line in that we can't really afford to spray neem oil if we've got a small aphid outbreak, you know? So, let's see what we can do to get more lady beetles in here. Maybe it's releasing, you know, 100,000 on the collard crop and seeing what happens. It's putting in some lightweight insect barrier over the radishes to keep the flea beetles out and we're going to push it out and try to get them finished in four weeks, or whatever. It's pulling up crops. It's not growing any Brassicas in May and June because harlequin bugs are going to come in and destroy all of them. So, we're not going to spray. We're just going to stop growing Brassicas in that part of the year and then replant and start them up again, re-planting in August. It's - I won't say it's minimal input, but in a sense, the controls are minimal. It's about prevention. It is about; how do we create healthy crops which are then going to be more resistant and more resilient?

James’ description of the efforts it takes to raise vegetables in North Texas shows the interactive stewardship required to maintain a market garden. All the seasonal vegetable producers spoke of a daily effort to maintain the crops and many of them pointed out that building infrastructure like drip irrigation is helpful, but also needs to be maintained constantly.

Ken Halverson at Larken Orchards had a garden of seasonal vegetables available to pick from their orchard in the spring months. His approach to maintaining their market garden is from a different perspective:

> I was big on cauliflower and broccoli. Broccoli, if you cut it every day, you'll get more broccoli every day with it. And we, I can't tell ya’ - my little garden right here where I usually have a garden, I can't tell you how many pounds, hundreds of pounds of broccoli and cauliflower we raised right there. And that was our main dinner meal.

Ken also told me that he remembers to plant cauliflower and broccoli by Valentine's day, for it to have enough time to grow before the heat sets in.

Deb Terrell from Nature's Circle grew her seasonal vegetables in raised keyhole gardens. A keyhole garden is shaped so that there is a hole in the middle for the gardener to stand and the garden encompasses her on three sides – this design is supposed to be easier for the gardener to manipulate the garden without disrupting it. As Deb was preparing the gardens in the fall, she filled the bottoms with cardboard material so it could break down and hold in moisture. After that she put in a layer of compost and then soil on top. The layers will break down to feed the plants as well as keep them healthy through a possible drought.

The concern over plants being properly watered is constant during a Texas summer. Andrea Gorham told me that at Tree Folk Farm, they started with drip irrigation but because of their sandy soil, the water would soak into a spot and not spread. They also tried impact sprinklers, which worked but were not much better than drip irrigation. Andrea told me that the solution for them ended up being wobbler sprinklers. As she showed them to me, she explained:

> Those are wobblers, mini wobblers, they are low pressure and they – those are amazing. So, because of the way our land is and the way our soil structure is – those are giving us a lot better results to get things started… we can cover a lot more space and it's not slamming in one spot. You know, kind of like the impact sprinklers are sprinkling and they shoot way over and they hit really hard somewhere and just kind of drizzle everywhere else. These [wobblers] are a really nice, fine rain.

Andrea told me that the wobbler sprinklers are not only helpful for sandy soil, but they would also be helpful if a farmer has a fine sand in their well water. The fine sand in well water will clog and break drip irrigation hoses. Wobbler sprinklers have a larger opening with a wobbling sprayer, so they do not clog in that manner.

Another aspect of growing seasonal vegetables is knowing what to grow. As food advocate, Amanda Vanhoozier advised, "track your sales, you know, get that data so then you

can analyze and say, you know, next year I'm not going to plant that because it took up too much space on my table." Amanda also gave me the tip to check with the seed companies to see what they are focusing on producing, because seed sales indicate future trends.

The best approach to growing seasonal vegetables, according to the vegetable farmers that I spoke with, was to be realistic about the obstacles that they may encounter and to plan for those obstacles from the start to overcome them through the growing season. I found that many farmers would also plan for obstacles through planting a wide variety of vegetables, because whether that may hurt one could help another. Although there may be many things to consider in growing seasonal vegetables, this type of planning was a direct key to success.

4.3.1.2 Seasonal Flowers

Seasonal vegetables were not the only type of plant that I found growing in market gardens, there were also seasonal flowers. Seasonal flowers are somewhat more demanding, because they require constant temperature maintenance for a good spring bloom. Sue Newhouse from Aunt Sue's Barn had a hoop house for hers to grow in, but she still constantly maintains their temperature through opening and closing the hoop house and using frost cloth. Sue sells her flowers at the market, but seasonal flowers in market gardens are not always used for sales.

In addition to sales, seasonal flowers also benefit other parts of the farm. As Deb Terrell explained:

> Why do I grow so much luffa? I grow so much for the bees. I don't know if you have seen my - if you saw, it'll all be green with yellow flowers. And it's for the bees. And the thing about the bees is, especially in Texas, you're looking at [luffa blooming in] July, August, September, October, November, all the way up until the first frost. And this is the perfect source of food for bees. And I'm not just talking about honeybees, I'm talking bumble bees. I saw some green metallic bees, mason bees. I don't even know all the species of bees out there. I can just tell you that this is buzzing with bees and it's really fantastic.

Deb Terrell was not the only one who told me about how helpful blooming flowers are to

beekeepers. Bill Hartley explained why letting the bees eat what is available is preferable for beekeepers, “normally, even during the drought, [bees] produce enough honey to make it through the winter.” The relationship between many bees and seasonal flowers is symbiotic (discussed in section 4.3.4 Apiaries).

4.3.1.3 Perennial Crops

Many of the farmers interviewed planted perennial crops, meaning the plants grow back yearly without being replanted. Perennial crops like grapes and raspberries are vining and require some maintenance, while other crops like asparagus can be reliable once they are first established. Almost all perennial crops take two to three years to become established before they will produce fruit.

When asparagus is planted, it needs to go through its entire life cycle without being disrupted. Once it has been allowed to grow fully and mature (usually three growing seasons) asparagus is harvested with a snap. Sue Newhouse planted asparagus and blackberries when she first started growing, she found the wait time to harvest beneficial. She reasoned, “the fact that you can plant them this year and they won’t produce until next year gave me time to figure out what to do with them, since I work full time.”

The extreme highs and lows found in the North Texas climate make it difficult for zonal planting maps to predict certain crop viability. Sue explained the process:

> You learn that [specific] plant in your area. The guy that I call to ask about it [raspberries], he’s up in Maine. He doesn’t know. That’s where I bought my plants from. But they say anything that can grow in Virginia can grow in this latitude, so that’s what I’m doing.

Sue originally planted Dorman red raspberries, the only variety that is supposed to grow in Texas, but she found that she wanted to try other varieties. Through learning about the possibility of growing raspberries from latitudes as far north as Virginia, Sue planted a different variety a few

years ago and has been delighted with their success.

I planted raspberries after interviewing Sue and emulated her methods. I planted both Dorman red and another variety – Killarney red raspberries, which are supposed to grow further north. Although the Killarney's have produced, and they are bigger and tastier berries, we have not gone through winter yet for me to be sure that they will survive a year. I am surprised at our success with them so far. In comparison, the Dorman red are much smaller and less flavorful.

Sue also told me that she will trellis the raspberries and cut the tops at four feet so that the vine will spread horizontally from there. Michael Alford noted his preference, "we have them trellised. A lot of places don't trellis them, they're just kind of like sprung out everywhere. Ours are between two things, so it's a little easier to pick." Trellising the berries may not have a real effect on crop yields, however the maintenance at the beginning helps make the harvest at the end easier.

4.3.1.4 Tropical Fruits and Vegetables

While perennial crops like raspberries return year after year and rely on the number of cold hours that they receive in the winter to determine if they will produce a crop, tropical fruits and vegetables require prolonged, extreme heat to grow. Before conducting this research, I knew that tropical plants could grow in North Texas because my mother grew a banana tree one year when I was a child. I also remember it did not survive the winter. Jay and Prisca at Day Dream Farms have found a combination of adaptations for their tropical fruit and vegetable cultivation.

Jay and Prisca told me that they are planning on putting in a hoop house at their farm soon. Right now, they order the root for their cassava plants from a distributor located in Florida, where the weather stays warm all year. With a hoop house, they could grow some of the cassava plants long enough to divide the roots the next spring and perpetuate their own crops.

Another adaptation that I found at Day Dream Farms is a use of a "plastic marsh" that Prisca told me they had found while stationed in South Korea. As she explained, "we took that technique from Korean [methods] – to keep the plants moist, we sink it in that plastic and it's keeping it moist under it." The plastic marsh works like a mulch to hold the moisture against the cassava plant's roots.

Holding in the plant's moisture is not the only beneficial aspect of the plastic marsh. As Jay explained, it also protects the roots from being too soggy in a flood, "[if] we get about four or five inches [of rain], it's not going to be as wet or exposed. But usually when it rains, the next day's a sunny day so it dries. But the plastic protects the little area, like the growth of the plant here. That's a technique we found." Jay also told me that their soil was too claylike for the plants to grow very well, so they amended it with pea rocks and other things to make it more manageable.

Market gardens in the North Texas area may grow seasonal fruits, vegetables, or flowers, perennial crops, or tropical fruits and vegetables. Most of the farmers that I encountered with market gardens grew a combination of those, and some had livestock or orchards as well. The stewardship of these gardens increased with the farmer's ability, and although large areas may be planted with a single crop, the rotational planting and soil amendments used work to grow plentiful crops without the use of chemicals.

4.3.2 Permaculture and Natural Growing Methods

As mentioned earlier, "permaculture" is the term for farming methods designed to mimic nature and create a permanent source of food through cycling energy. At an introductory permaculture meeting that I attended, the men teaching the class spoke of designing the system in zones, working from zone one at the house (for the plants that need the most attention) to zone

four or five (for the area needing the least amount of attention). I did visit a true permaculture garden for one of my interviews, however most of my experience has been with farmers using permaculture growing methods, although their entire market garden or farm may not have been designed as a permaculture system.

Deb Terrell at Nature's Circle exemplifies this cycle of energy in the name of her business. Her methods of building her gardens and growing plants to feed her bees closely mimics what is found in nature. Deb's reasoning for growing in this manner links closely to the environment. As she explained:

> I think I was probably influenced by Earth Day and everything. Because when I was growing up, Earth Day first got established. And that's why I've always promoted Earth Day, because of the fact that there are other ways to do things and still be successful. So, I think because of that, I've always been geared [to grow in this manner].

Another permaculture method was Tree Folk Farm's use of Hugelkultur swales to plant some fruit trees in their backyard. A Hugelkultur swale is used in permaculture to catch runoff and contour the land as well as feed the plants you grow on it through the material planted within the swale. Andrea and her husband, Matt, told me that they had first dug up a trench and filled it with a lot of wood, mostly rotting wood, so that it would break down over time to feed the trees. Then they put the soil back and planted the trees on top. In this manner, the trees are continually fed by the logs breaking down and are watered through the bottom of the swale with the water that collects.

Another type of growing methods mentioned by farmers were "natural growing methods." Many times, farmers would explain to me that these natural methods involved the use of cycling waste in the system, such as leaves, hay, or old vegetables, into compost for fertilizing plants. The point of specifying that the methods are natural is to draw a distinction from the use of chemical fertilizers or pesticides.

A type of natural growing method that I learned about directly before finishing my research is referred to as “Korean Natural Farming” or “Jadam Korean Natural Farming.” I think that the methods used in Jadam Korean Natural Farming were some of the methods that Jay and Prisca described to me at Day Dream Farms, however my confusion over the terms and their description of compost tea being so similar to what I was already familiar with, I did not look into the term further until I saw “Korean Natural Farming” on a post in a farming group that I belong to.

As it turns out, Korean Natural Farming methods are completely different from the ones that I have heard of. According to a YouTube video *Healing the Soil* by a group called Regenerations Botanical Garden (2016), these methods involve using plants and microorganisms in combination with different fermentation methods to create fertilizers and pesticides. The methods also include using organisms like mycelium or mushrooms to breakdown different harmful pesticides in the soil. This is done by digging up and replanting areas of growth and doing other types of microorganism transplants to bioremediate the soil (Regenerations Botanical Garden 2016). This example of a whole new realm of farming that I just discovered shows the many ways that “natural” methods of growing can be learned and iterated to create greater success in farming.

The permaculture methods that I witnessed at farm interviews were used as adaptations to have greater success in growing through using nature’s processes to the farmer’s advantage. While Tree Folk Farms and Nature’s Circle purposefully used permaculture methods in their design, many other farmers would use similar methods without the overall design, such as layered bedding or the use of swales. Through a combination of all these methods a farm can achieve greater success.

4.3.3 Orchards

Although many of the farmers who participated in this research planted fruit trees, only one of them had a full orchard. One of the most impactful approaches that I learned during this research has been Ken Halverson of Larken Farms Orchard's approach to planting his orchard. In fact, when he explained it to me, I had to ask him to explain it three times, because he was looking at the things that I had learned about growing fruit trees from an entirely different perspective and it completely changed my understanding of orchards. Ken's approach to growing fruit trees in general is indicative of his persistent character.

When Ken first went to plant fruit trees, he was told by everyone around him that he would not be able to grow them in Texas. When I asked him what he says to the naysayers now that he has an entire orchard, he replied, "they can't argue with me because [of] the production." Ken reminded me that fruit trees (the ones grown in Texas at least) are not a single tree. Rather a fruit tree is grafted. This means that the fruit tree's trunk is grafted or grown onto a hardier tree's trunk and roots, so that it will grow in a wider variety of conditions. In fact, being curious about the root tree himself, he had let one grow. Ken described it: "if you let the root come out and then you have the fruit tree right alongside of it. The fruit trees still does what it does and then this root over here becomes - I have one right here and they're just - they're a pretty tree but their thorny there. They get real nasty." So, the first half of the fruit tree's job- growing in the ground- is more certain due to the roots it is grafted onto.

The second half of the fruit tree's job is production, and this is where chill hours really come into play. Chill hours are the total number of cold hours (below 32° F) that a plant encounters through late fall, winter, and early spring. Fruit trees require a certain number of chill hours before they will produce fruit, and the number of chill hours they need is determined by

the variety of tree that you plant. Before meeting Ken, everyone that I had discussed chill hours with was only using them to determine if the tree would be able to produce fruit or not, based on the number of chill hours normally counted over a North Texas winter.

Ken takes the idea of chill hours and turns it on its head. For Ken, once he knew that he *could* grow fruit trees here, using chill hours turned into an approach to creating continual harvests throughout the seasons that he wants to be tied to the farm (late spring, summer, and early fall) and less maintenance of the trees when he does not. Ken explained his approach:

> The chill hours are everything because fruit trees have to have chill hours, which in north Texas it's 500 to 700 hours. They [have] got to have [them]. Well, I've taken some of our trees from what they would be, kind [of] California stock. They have like 300 hours chill time. So, that's why we're able to about, mostly every other year, those trees [produce a good crop]. The weather will be just perfect - and you can have, like this year [the fruit on] those trees.

Ken then told me that their harvests in 2018 started in April, and once those peaches ran their course, the next peach trees, from Colorado, started to ripen. He showed me how the rows on his orchard are planted, every four rows are a different variety of fruit tree. In this manner, every two weeks, the harvest goes to the next four rows, until the harvests are complete.

While there may be other farmers who look at chill hours in this manner, I did not meet anyone who used them as Ken did. I left our interview convinced Ken is the genius of the orchard. It was only after leaving that I realized that planting an orchard in this manner is also an adaptation to withstand the climate variances which are common to the area. Not only does Ken have rolling harvests starting in April, but in the event of a very warm winter, he still has trees that will produce.

There is also a specific way that Ken prunes his fruit trees to better enable his pick-your-own customers to get to the best fruit. When Ken first plants a tree, he will cut it down to knee height. Then, he explained how they prune them:

> So, as you look at the trees, you'll always see that the scaffold, the scaffold is your main branches that come up. We try to do it three, three to four branches when they're coming up. That way when you go to trim, you trim the inside. You take all the leaves off the inside that way on those scaffolds. Then peaches, when they come out, they are able to get plenty of sunlight.

Later, Ken told me that pruning the trees in that manner helps the fruit avoid damage from high winds. There was quite a bit more that I learned while I was visiting Larken Farm's Orchard for the interview, like peaches prefer dry roots and the best ones that he has are on top of rock formations. Ken also said that he works with the Texas Agrilife, the agricultural extension in Texas, sharing information and ideas for planting and pests in the area. Larken Farm's Orchard also works with nurseries in the area, to develop Ken's preferred varieties of fruit trees on his preferred rootstock and for the nurseries to increase the varieties that they sell, by taking trimmings from his orchard to graft to new trees.

4.3.4 Apiaries

Ken Halverson was not the only one with a working relationship with Texas Agrilife. Bill Hartley told me that he also worked with them at times. As he explained:

> They tend to contact us master beekeepers, from the apiary inspection service and A&M, as soon as they feel like they want to see what's - how this works. They have the labs do a ton of research, some of the best research in the country, but they also inform us what they're doing and what we're trying to do and want to get our feedback. Now that's - I don't know if it extends much beyond the master beekeepers.

Bill's history of beekeeping made him quite knowledgeable, along with working with the agricultural entities and taking master beekeeping classes. However, Bill noted that his preference for mentoring as the leader of a beekeeping club greatly increased his wealth of knowledge. He told me,

> I enjoyed doing it. I learned more doing that - I learned more in two years of working with that club about beekeeping than I probably learned in the first 35 that I was involved. Because when you do that, you see a lot of the potential mistakes. A lot of the health issues that bees have. I mean you can have one nice, healthy apiary for a good

> beekeeper, but if you're watching 30 other people or 30 other hives that other people are maintaining, you see a lot of different things going on.

Although Bill had an apiary, or a collection of hives, since 1985, he had only recently decided to become a master beekeeper and to transition out of his career in stone masonry. Personally, I have always been interested in beekeeping, and I once volunteered to help remove a hive from a friend's house with a beekeeper when I was a child. When I said I was interested in beekeeping, Bill Hartley told me that this type of interest is not exceptional. As he remembered, "[when] we started our club, the growth of the clubs…It was not unique to see this club go from eight to 10 people to 150 overnight. It was not unique."

With so many people interested in beekeeping, I wondered why there were not more apiaries. Bill's answer was the attrition rate:

> You know, half of all people who get into beekeeping, unless they've got a supportive club, will drop out within a year. That's national statistics. 50% of all beekeepers will give up within a year. Another 50% will give up within the second year.

There are many reasons why beekeeping is a difficult type of farming. As James Hunter told me about the hives at Paul Quinn College:

> So, we lost, I don't even know, four, six hives over the winter and then it - I mean we're less than a mile to the landfill right here. I-45's right there. A couple of hundred yards away, I-20 is right there. I got industrial buildup up and down either side. I think that the bees are just suffering because of that.

The unfortunate reality of beekeeping is that the bees do not stay within the borders of their owners' property. Bees will travel in a three-mile radius to collect pollen. Deb Terrell told me that is why she promotes growing luffa so much:

> Yea, there are certain plants that you don't want your bees getting. Because it effects [the flavor] – it makes you have to throw the honey out. That's another reason to grow luffa, because it's a late season flower and it provides food for the bee…You try to keep them a little bit more contained around here. I'm trying to get everybody to grow luffa.

Those different plants that affect the flavor of the honey are commonly discussed at local

beekeeping meetings, which is why it is regionally specific. Bill Hartley explained more:

> It is almost impossible to make money on honey in this part of the country. We have such a short season which to harvest because of the noxious plants that come out. [They] are coming out now. Most parts of the country where you can, people harvest a significant amount of honey and sell it, they harvest all the way up, almost until Thanksgiving. [Texas has] Snow on the Prairie and then Broomweed, they all produce large amounts of honey, it's good material to winter your bees on.

There is quite a bit of variance in beekeeping across the country because of the different native flowers that may be growing. That is part of the reason why beekeeping clubs can be so helpful, it is much easier to know what to watch for if you know what is happening in your region. At the club that I attended during this research, the members watched for Snow on the Prairie blooms and all warned each other when they saw it growing, to be sure their honey was harvested before the bees got to that pollen. Bees rely heavily on the environment outside of the farm, so beekeepers approach their methods by looking to the outside environment and wildlife. Shifting from beekeeping and looking to the outside environment, some of the farmers that I interviewed had to create their own environments for their plants to flourish.

4.3.5 Designed Environments and Systems

Controlled growing environments are a large investment on a farm. Two of the farmers that I saw with controlled growing environments already knew the type of food that they planned to sell prior to building, and they knew that there was a demand for their product. Considering the size of the investment, knowing that there is a demand for the product or figuring out how to sell it prior to building the greenhouse are almost necessary to ensure the success of a farm with a designed environment.

4.3.5.1 Greenhouses

One type of controlled growing environment is a greenhouse. While conducting

interviews, I saw an array of types of greenhouses. Some were built more durably than others, however, to have a greenhouse that works correctly at maintaining temperatures, there is a constant need for maintenance by the owner.

As Jeff Bednar from Profound Microfarms explained, even with a greenhouse, growing in North Texas is difficult:

> So, after I got into this, I was told by some of the equipment manufacturers who are friends of mine, they said North Texas is one of the hardest climates to grow in, in all of America. Because we have really, really, really hot, extended highs and really, really low lows. You know, even Houston and Austin are way easier to grow in than Dallas is, specifically for leafy greens.

He went on to explain the difference in maintenance that these extreme highs and lows cause:

> Like in Houston, they don't need to actually have heaters. There was no - the greenhouses there don't even have heaters because it doesn't get cold enough for that long to even be bothered with heat. And then, we have to have propane tanks and heaters and you know, last year I think I spent $2,800 keeping that greenhouse warm and so that was a - you know, there's additional significant cost in that, that may or may not be there depending on the climate. You know, up north you may not need chillers. You know, if you just open the sides during the summer.

James Hunter explained how the evaporative cooling system in the greenhouse at Paul Quinn College. It works in a similar way to a swamp cooler. There are panels with fluted cellulose that looks like coils. Water flows over that cellulose while at the opposite end of the greenhouse, a fan blows air from inside of the greenhouse to the outside. This creates suction to pull air through that cellulose, cooling the air down as it flows into the greenhouse. As James pointed out when we were leaving, the climate control can be quite fragile, “you see that gap in the door right there. Each inch of gap is like a two degree drop in efficiency.” The 3,000 square foot greenhouse at Paul Quinn is built with a permanent frame and glass windows.

4.3.5.2 Hoop Houses

The permanent greenhouse at Paul Quinn could last twenty years or more. Hoop houses

are another type of greenhouse. They have permanent hoops as internal framework with a film cover that typically lasts three to five years. Often, the term hoop house and greenhouse are interchangeable. Aunt Sue's Barn had a few hoop houses in place. Sue Newhouse's hoop houses encompass parts of her market garden, so she could grow flowers and strawberries through cold weather.

I also saw hoop houses at DFW Aquaponics. They had sealed-in their commercial greenhouse as much as possible and built an aquaponics system inside it. Sealing the greenhouse made quite a difference, as Loretta Messinger told me;

> We'll use a double layer [of polycarbonate plastic] like what we have in the greenhouse and we'll put a blower in it so that it blows air between the two layers and that acts like a layer of insulation and it really…the big greenhouse is on average …even with the wet bars running, fans running that one was ten to twelve degrees cooler [than the educational greenhouse] on any given day. And then in the winter ten to twelve degrees warmer, which when you're trying to grow lettuce in Texas, that's a huge difference.

Although hoop houses and greenhouses can somewhat control the temperatures that plants are grown in, the humidity can affect how well they work. As James Hunter explained,

> The more humid the temperature is the less efficient the systems become because they're already kind of like… it's humid air. So here it's, it's a pretty effective thing. I mean when we're looking at forty or fifty percent humidity. If you're getting down to south, southeastern Texas, Louisiana, Florida, these systems aren't as effective. If you get out into desert environments, you get a lot more evaporation into the external air, so you run through a lot more water, but it's highly efficient inside.

The type of cooling system used in a greenhouse can make a big difference to the temperature, which heavily effects the growth and consistency of the plants inside.

4.3.5.3 Mushroom Houses

A different type of a controlled growing environment, a mushroom growing room, accounts for differences in humidity. When I discovered that Tree Folks Farms were a mushroom farm, I am not sure what I was thinking I would see – images of mushrooms growing

up the side of a tree came to mind. What I saw instead was a small building designed for the purpose of growing mushrooms in a technologically advanced way.

The building was clean and bright inside, with mushrooms growing out of the sides of large, blocks of sawdust held together in bags. At the top of the room was a ventilation system to control both temperature and humidity. The mushrooms are humidified with water that mists from the system, and there is fresh air constantly exchanged because mushrooms offset CO_2. Andrea said the mushrooms do not require much maintenance. When I asked her how often she needed to check on the mushrooms, she said,

> Daily to twice daily. I at least have to pick them because they drop a lot of spores and they grow really fast and if there's too many spores then it will clog the filters and it will just cause problems.

While the mushrooms grown at Tree Folk do not require feeding beyond the initial creation of the mushroom blocks, other systems are created as closed circuits to feed plants.

4.3.5.4 Aquaponic and Hydroponic Systems

Aquaponic and hydroponic systems have similar designs. Each cycles water through a system and has a point of input for something that ends up feeding the plants through the water. Although I assumed that the systems use extreme amounts of water, exactly the opposite is true. A great benefit of growing food in these systems is that they use only about ten percent of the water that conventional soil gardening uses, because of the closed system. One of the largest effects of the population boom in North Texas is that an already water scarce area needs that much more water for the growing population to use.

Another benefit is the system does not depend on the quality of the soil. As Loretta Messinger at DFW Aquaponics put it:

> You don't have to have good soil, you know, for a lot of people who are interested in doing farming, it's very expensive to buy good farmland. And with aquaponics, it doesn't

> matter. You can go buy an old gas station and grow because you're growing on top of it. You don't actually - you know, putting it on cement would actually be easier. It's already level.

DFW Aquaponics was originally created as a group education center, where the members wanted to learn to build a greenhouse and aquaponic system on a budget, and their educational greenhouse stands as proof that it is entirely possible to inexpensively build systems like this, as long as the builders are willing to put in "sweat equity" as Loretta refers to it. She walked me through how the system was created:

> This is our 300-gallon sump tank. We dug a big hole, buried this tank in the ground…and the pump is down in there. The sump is always the lowest point. And so, all of the water drains back there. We pump the water up into the fish and then, everything else is completely gravity fed.

The aquaponic system pumped water from the sump tank to the fish, which were held in a reused 275-gallon IBC-tote. The fish are fed a multispecies fish food and, besides the original water to fill the system, that is the only outside input. Loretta told me that they had tilapia and feeder goldfish in their tank, while I saw koi used in Paul Quinn College's tank.

Although the type of fish may not matter in that they will all create waste, tilapia cannot handle cold temperatures like koi can. The challenge of fish that cannot survive the cold is met with the advantage of fish to harvest. Jeff Bednar at Profound Microfarms recalled, "last year we got 119 pounds of tilapia out of this system, which was kind of cool." Although the amount of fish grown in an aquaponics system is minimum, the advantage of being able to harvest the fish is that every part of the system is used, in fact Loretta told me that when they clean out the solid fish waste, they use it to fertilize and water their soil gardens outside.

From the tanks that hold the fish, their waste is pumped through a series of tanks that first clean out any solid waste and then allow the water to settle for the conversion that needs to take place. Loretta's explanation of the conversion helped me to understand:

> Mainly the fish waste that's used by the bacteria is the ammonia that they expel through their air vents and through their gills. And there's two different types of bacteria that live in this system. [The bacteria is] in, well, it's in the water, on the walls of the tanks and everything, but primarily on the rocks that are in the media beds. The first bacteria takes that ammonia and it converts it into a form of nitrogen called nitrites, which is bad for the fish and in a form that the plants can't take up. And then there's another bacteria that feeds on the nitrites and converts it to nitrates. Harmless to the fish. And it's in the form of nitrogen that the plants can easily take it through the roots. Nitrates is golden.

After being filtered through the series of tanks, the water flows out through adjustable ball valves into the media beds. The media beds are large open containers made from treated lumber, about 10” to 12” deep and full of granite. The granite holds the plants in place while also providing numerous surfaces for the bacteria to flourish (good bacteria that is turning waste into food).

In their educational greenhouse, DFW Aquaponics had many varieties of plants growing besides leafy greens, like tomato plants, cucumbers, and even a pineapple (although Loretta said it had not yet produced fruit). In this type of system, the plant’s roots are constantly bathed in nutrient-dense water, giving it everything that it needs to grow. Therefore, the plants do not need to develop large root systems and their energy is focused on growing above the surface.

The hydroponic systems that I saw at Profound Microfarms were similar to aquaponics systems, but without the fish. Instead, Jeff Bednar told me that they put a conventional mix of hydroponic fertilizer into their system, and “most of what the nutrients are just like magnesium, it's natural elements.” Once the original tank is filled, the nutrients are consistently maintained. Jeff sends off water samples every six weeks to a lab in Florida to make sure the water is properly balanced to feed the plants. As Jeff explained:

> So, when I first started in, I never changed any water out, and then after six months, everything just, the roots started looking really sad and I lost that entire pond. And it’s because our city water is super high in chloride and sulfates. And then because the plants weren’t using them, it was just building up and building up until it became toxic. So, now what we’re doing is we’re draining about 20% of the ponds out a month. And refilling and adding in some more nutrients.

The water drained from the pond goes to feed the soil gardens also found at Profound Microfarms. I asked Jeff why he grew using hydroponic systems, he explained:

> We switched this over to hydroponics for a couple of different reasons. We are getting much better production out of hydroponics than the aquaponics. Around fifty percent faster growth. And with faster growth, not only are we more consistent and stuff like that, but we're getting less bugs. And less bugs means that we are using less pesticides, you know, and stuff like that.

Jeff told me that the consistency and faster growth is why his chef clients prefer to do business with his farm. He uses the hydroponics systems to grow leafy greens, culinary herbs and flowers, and microgreens. Although Profound Microfarms has switched to hydroponic systems inside of their greenhouses, there is still an aquaponic system outside, the soil garden previously mentioned, and fruit trees planted around the property.

The designed environments used by farmers are some of the most extreme adaptations that can be used to withstand the weather in Texas, and even those require constant maintenance to ensure plant growth. All the farmers who grew crops had some combinations of these types of gardens, methods, and environments found on their land. Most of them also had some type of animal present as well.

4.3.6 Poultry

Half of the farmers who participated had some form of poultry on their farm, such as; chicken, guinea fowl, turkeys, ducks, geese, or a combination thereof. While some of the farmers wanted poultry in order to sell their eggs or keep the eggs for themselves, other farmers would tell me the benefits of having their poultry around for insect control or to use their manure as fertilizer.

Poultry Terminology
Roost – to settle for sleep
Hen – female poultry (many types)
Drake – male duck
Poult – infant turkey
Bloom – protective outer film on eggs

Figure 26: Poultry Terminology

4.3.6.1 Chicken

Chickens are the most common type of bird I encountered. Some of the farmers, like Jay at Day Dream Farms, own them primarily because they just really like chickens. As he told me:

> You know, and for me and my part, it's all about the chicken. Like, I tell them I'm just obsessed with the chickens. I could watch them for hours. How they do that, how they come to you and they just – before you know it, you get fresh eggs and they come. Those eggs, especially those chickens we raise here, they are free range. Man, but those eggs are just amazing.

Chickens can require frequent attention; I have heard them referred to as the "most high maintenance" animal to have on a farm. Mark at Rehoboth Ranch said that the chicken part of their production takes much more attention than he can give while he works as a paralegal. He said that their solution is to work with another farmer who uses Rehoboth Ranch's same practices in raising chickens on their farm. In this manner, Mark can ensure that the chickens get

the attention that they deserve. As Mark explained:

> Now, the chicken production, we pay someone else to do all -almost all the labor for that. So, we oversee that, but it does - not on a day to day basis, it is not as much of a big deal then that works out really well for us because they need a lot of close attention. So, if I'm at work and a water breaks, it's not good news in the hot Texas summer.
> On a personal note, I do not yet have chickens on my farm because of how secure the

coop needs to be built. Even though chickens require such safeguards, they were the most common type of poultry that I saw at farms. Their popularity is in a large part due to the consumer demand for chicken eggs, as I have come to learn, many consumers are unfamiliar with other types of eggs.

4.3.6.2 Guinea Fowl

While some farmers raise only chickens, other farmers prefer to mix their chickens with other species of fowl to make a flock, or to not have chickens at all. Deb Terrell at Nature's Circle told me that for her, guinea fowl work better. Deb explained:

> I use them for basically bug control. They're great for the grasshoppers and they're not as messy as chickens. Like, they don't get into your garden – of course, I do keyholes, so they're [the gardens are] up off the ground. But they [guinea fowl] don't get in there and scratch around like chickens do.

Deb told me that she has trained her guinea fowl to go inside her barn at night just like chickens would, and to roost for the night. I was told by some farmers that an advantage of guinea fowl is that they will find snakes. They will not actually kill the snakes, but they will circle around the snake, and their call is so loud that they will alert their owner of the danger. Deb's guinea fowl were serving a purpose on the farm to control insects, but other forms of fowl are more of a preference than a working farm avian.

4.3.6.3 Ducks

Only a few of the farmers had ducks on their farms, and their ducks seemed more like an

owner preference than a necessary animal on the farm. As James Sullivan at J.S. Ranch explained, “The ducks are kind of yard art. I just like ducks. I used to hunt 'em, But I don't anymore, now I got 'em for pets.” There were many different colored ducks on James’ farm, and they did indeed look like lawn ornaments.

On my own farm, we started with ducks. When you are new to farming and you search online for the easiest animals to raise on the farm, a pekin duck comes up as number one on several lists. Ducks are also easily found for purchase in the spring in most feed stores in North Texas. Both of these reasons prompted our interest in ducks.

There were quite a few things about ducks that I was not prepared for from reading the books or blogs online. Ducks are extremely messy, and although I was warned of this, I was not truly prepared for the foulness of fowl. They may not destroy a garden the way chickens do, but they are curious and like to peck things with their bills and that makes them destructive as well. Despite these drawbacks, ducks are fascinating creatures to watch.

Once I developed an affinity for the ducks, I started to learn more about caring for them through following different social media groups online. Many books will tell you to add Brewer’s yeast to unmedicated poultry feed so ducks can eat it, but do not explain why. The first lesson I learned is that the brewer’s yeast is used to increase the amount of niacin in the feed, because without niacin ducks can experience neurological problems. Other things, like peas, work to increase niacin much faster and ducks love to eat them. Ducks also always need water, and they need the water deep enough to cover their nasal openings, but they are so messy that they spill it everywhere. Although it may seem like a good idea to deprive them of water overnight to keep their coop clean, in the long run this will damage their nasal passages and is a form of animal cruelty.

Another important part of duck survival is the male to female ratio. Ducks do not mate one male to one female, rather it is preferable to have four or five hens to every drake. If you do not have a good balance, the drakes may hurt the hens due to their aggressive mating. This is one of the reasons why our flock went from two to six. The females and the male mate, but none of them have ever sat on their eggs, so we take those for food.

Ducks are also protected under the Migratory Bird Treaty Act (MBTA) and the laws around them are important considerations. If ducks are found in the wild, it is illegal to take them as domesticated animals. Rather, if the ducks are in any way in danger or hurt, a wildlife rescue or rehabilitator must be called to take the wild ducks. Violation of the MBTA can result in a federal offense and a lifetime ban from owning poultry.

All these details explaining how to raise ducks and the law around them were facts that I only learned through pursuing social media groups, sometimes asking questions, while also closely observing my own animals. This demonstrates a sample of the trove of knowledge that is maintained by fewer farmers every day, and it is knowledge that is not even considered by many people in the general public on the outside of farming, me included. This also demonstrates the power of the information age and the ability that farmers today have to search for and learn best practices for their farms to follow.

4.3.6.4 Other Poultry

There were a few other species which I heard about during the interviews, but I did not see those firsthand. Turkeys are difficult to raise from poults, however if they reach adult size then they are much easier to care for. Geese were also mentioned a few times, and although each time the farmer discussed how territorial they can be, the farmers who owned them also enjoyed them for their protection and production.

Geese are large waterfowl and may honk and become aggressive if they feel their territory is threatened. Mark Chapin told me that “geese were the best watch dogs we ever had” when they used to raise them at Chapin Farms. Although the geese served as great watchdogs, Mark and Wanda also remembered that the bird’s territorial nature came with consequences. While they were raising geese, Mark and Wanda had difficulty finding a farmhand to care for their animals. The different farm caretakers that they wanted to hire were all afraid of geese.

Geese mate in pairs and lay only five or six eggs every year. Prisca at Day Dream Farms told me about their geese eggs, she said “[the] eggs are huge. They are like six or ten of a normal one.” The eggs may be huge, but they are much rarer.

4.3.6.5 Eggs

When I learned how eggs work through having ducks, I had a moment of insight about eggs in nature as compared to the grocery store. I know that ducks will not sit on their eggs unless they feel “broody” or their hormones are telling them that they need to sit on them, and if the eggs are not kept at a constant warm temperature for the first 36 hours after they are laid, an embryo will not develop. If the ducks do sit on the eggs and you do not want them to, you can place a cold plastic bottle under them and it will cool them off, somehow causing their hormones to change. Many ducks do not lay their eggs in nests unless they feel like sitting on them to hatch, they will normally just lay them in the yard. If the eggs are not collected, they will turn to rotten eggs.

Once the eggs are collected, they are not supposed to be washed. If they are not washed, they can sit outside of the refrigerator for several months, if you turn them daily. Once the eggs are washed, they lose their “bloom” or the seal that keeps the inside from spoiling, and they need to be refrigerated. Duck eggs taste like chicken eggs plus an extra yolk. They have more

albumen, or egg white, than chicken eggs and so they are preferable for use in baking and making pasta.

Although most of these methods of daily care that I know were learned firsthand from raising my own ducks, it was through learning these methods that I found additional ways that knowledge works within farming communities. The knowledge that I learned concerning animals on the farm was not focused only on poultry. Since Texas is known as the land of cattle, it is appropriate that so many of the farmers that I visited also had livestock on their farms.

4.3.7 Livestock

Livestock are animals living on a farm that serve as a source of income. The livestock management practices that I saw when visiting local food farms are considered small stewardship practices. These farmers interact with their livestock differently than the industrial CAFOs (discussed previously in section 2.1.5 Consequences of Industrial Food), and the practices that they are using are to ensure greatest health and overall well-being of their animals while also making a positive impact on their land. While livestock can greatly increase income, they also are high in cost and require either lots of good pastureland or some type of supplement to that in hay, cubes, or grain. All the farmers supplemented their livestock animals' feed at one time or another, because even good pastureland may not be reliable.

If the weather is bad, the pastures may not grow enough to feed even a small livestock herd. Unfortunately, the same weather that slows pasture growth also affects the grasses grown for hay. As Deb Terrell remembered one of the harder years in the past, "we had a guy locally who was going all the way to Missouri to pick up hay, and we were paying an arm and a leg for it. But we had all these pregnant cows and we weren't going to send them in to slaughter." The

cost of hay and having a relationship with a hay farmer were a constant topic of discussion amongst livestock owners.

I soon learned that these decisions of when to feed or cull and which animals need to take priority are constant judgment calls farmers need to make in livestock care. As Mark Hutchins from Rehoboth Ranch recalled:

> We actually pulled off a group of about a dozen steers in June - June and July when we had just so scorched [pastures]. We had to break them off and give them priority grazing to make sure that they were finishing out the way we wanted to. And the cows did fine, but it was…it was a hard year.

Mark then told me about the decisions that need to be made each fall. They must decide whether an animal is large enough to be worth processing. When an animal is processed, it is culled from the herd, brought in to one of several butchers in the area to be broken down, and then the meat is sold. If the animal is not large enough by fall, Mark will consider whether feeding it through the winter months would bring a better sale in the spring.

While thinning a herd may make it easier to feed during the winter months, some animals take longer to raise to be profitable. It takes eighteen months to raise cattle and goats for meat production while pigs and sheep take six to ten months. Once a herd is depleted, if the demand for meat increases, it will take a farmer a year or two to grow their herd to meet demand.

Retired dairy farmer, Arthur Downe mentioned that the battle over supply and demand was just the way things work in farming. As he put it,

> You'd have good years and bad years. Just part of farming – dairying. Well, what the deal was, milk would be so cheap that you would barely get by, and then they'd say – We need more milk, more milk. OK. You start breeding your cows and you get more milk and the price goes up and then – then they'd say – Welp, we've got too much milk. And then the price would go back down. Just like everything else. There was good years and bad years.

There are many considerations to stocking numbers; consumer demand, weather, available land,

and relationships with customers and suppliers were the most commonly discussed.

When stocking numbers need to increase, there are many ways a herd can be grown, either through breeding or purchase. Mark Chapin explained the process that he and Wanda went through to create their herd:

> So, we have a closed herd. We haven't brought anybody in since, what? 2008 was the last one, we brought Sis in. So, we haven't brought any other cows in since then. I mean the bull we got, we've just bought straws, semen, from another place and they had all our cows and [from] that we picked the bull out and then that was our…that's our herd.

Mark Chapin told me that the key to building a healthy, closed herd was to cull, or not allow reproduction from, any animal with qualities that are not desired. If only the best qualities are reproduced, the whole herd becomes hardier, which means that the cattle are better able to live off the land with little help from the farmer.

James Sullivan's cattle are dual purpose, meaning they are used for both meat and milking. His cattle are mostly raised to be sold to other farmers to use for breeding, milking, or raising for their own meat. His herd works differently:

> As heritage cattle herds go, mine is on the large side. Most folks will have a bull, two to six heifers, and cows. I'll carry two bulls and, you know, eighteen mama cows. So, I'll have a herd of about twenty, [with] eighteen mama cows, and that provides the genetic diversity that other breeders will like. Now that's not to say that they won't buy from the smaller grower. It's just that, you know, obviously with a bigger gene pool you get better gene diversity and with gene diversity you get kind of this…you just get the vigor.

Farmers who bring in additional cattle to build their herd through purchase will separate the new animal for a few days or weeks to make sure they are not bringing harmful viruses onto the farm before introducing them to the others.

Mark Hutchins said that the pigs and sheep at Rehoboth Ranch come to them as weanlings and they raise them through the warm months, thinning their numbers in the fall. When we started to discuss whether they will ever breed their own pigs, Mark told me that there

are feral hogs in the area around his farm. He said that this process of raising the pigs from weanlings is safer, “with just the males it's not a problem, but when you throw a female in the bunch, boy it's the siren call for every wild boar within a mile radius.” When raising any type of livestock, there are many similar concerns over gender and stocking numbers. Each type of animal also has its own set of specific concerns.

4.3.7.1 Cattle

Texas is known as an area for raising cattle, due to the history of grain-fed beef in the area (previously discussed in section 1.3 North Texas Farming History), the history of cattle drives, and due to the image of the Texas cowboy, which is still personified in ‘Big Tex,’ the mascot of the Texas Fair. Cattle were raised in Texas historically because they did well in the climate and large plains of native grasses that were available. Cattle are also some of the hardiest livestock a farmer can own.

Cattle Terminology

Bull – unaltered male

Steer – castrated male

Heifer – unbred female

Cow – female who has calved

Calf – young heifer or bull

Polled – born without horns

Figure 27: Cattle Terminology

With many of the farmers, cattle were their first steps into farming. As Ken Halverson at Larken Orchards told me:

The cattle have always been here. I've had that big beef master [bull] that's up there on

> the fire hydrant. He was my first bull. Then he had a - a beef master heifer that kind of started everything.

Mark and Wanda Chapin's son won a red angus heifer through his 4-H program and she is the matriarch of their herd. Deb Terrell at Nature's Circle also had cattle as the first animals on her land, although she considered alpacas before that.

One of the main reasons to begin with cattle is that they graze on the grasslands that are already present on many farms. Mark Hutchins explained how to tell a cow's needs have been met from the land, "I mean when you have a cow, you don't want a cow just running around. You want them to be head down, eating." Even with cows grazing on the land, daily care of the herd can take three to four hours to feed, water, and rotate to different pastures. Additionally, the farmers told me that daily observances of the cattle's overall health and demeanor were standard protocol.

The cows, heifers, and steers are kept in a grazing herd however bulls are standardly kept separate from the rest of the herd unless they are breeding the heifers and cows. Cows and heifers in heat may call out to bulls for hours, and sometimes may even destroy fencing to get to the bull. Farmers sometimes breed their cattle on a schedule, which helps to curb the unpredictable behavior of cows in heat.

Many of the farmers bred their cattle for winter or early spring calving. Mark Hutchins' reasoning was that the land is starting to grow back then, and can better meet the cattle's needs:

> So, they'll probably start calving in February or so. We want them to time the calving so that, when there are the most demands on the mom's body for that calf is when she's going to have the best nutrition to meet the demand. And so, you might say, 'well, wouldn't that be when she's gestating?' And that would be true, except for the other thing you have to consider is that when the calf is born, you want it to also have optimal grazing conditions.

Ken Halverson also bred his cattle to calve in February, but the reduction of chances of mastitis

(an infection of the udder) due to the weather being cold was his reasoning. As he put it, “we're trying to have everything, I like to have it in February and March - the babies - that way, like I say, you're not too hot.” Although even with calving planned for February, Ken told me that he was always prepared for signs of mastitis in the cow and any problems in the calves.

After the calves are born and through their first few weeks, they are kept with the herd and graze along with their mothers. Mark Hutchins explained his concerns over raising calves optimally:

> The cows as they're younger, it's particularly important for them to have fresh, clean water…I'm not going to have tall waterers anymore because even small - when they're on their mom, the more water they get, the faster they will go out and wean themselves, and eat more grass. The less stress they're going to put on their mom because they're deriving more nourishment from other sources so her body's not working so hard, so it's putting more work back into keeping her own flesh in good condition and getting ready for the next breeding cycle. And of course, the healthier the mom, the healthier the calf. And, it just begins a cycle. So, I'm not going to have tall waterers anymore, I'm going to have the shorter waterers, so that my small calves can be getting plenty of water.

Mark told me that he had just read a study about how clean drinking water may affect growth rates in cattle. Since reading it, properly watering was on his mind because he wanted to optimize his methods.

Timing calving on a dairy farm works differently due to the need to have cows constantly in milk, but a cow needs to stop producing milk during the last few months of her pregnancy to grow a healthy calf. As Arthur Downe explained:

> Before she has a calf, you turn her dry. What I mean is you quit milking her. Let her rest – you know, for two months, and then, here comes the calves. And then that’s when you start milking.

Arthur also told me that building a relationship with dairy cows is important, because making them familiar with being touched and trusting of the farmer is important to easily milk them. In my own experience, building a relationship with a heifer is a lot more difficult and rewarding

than Arthur made it seem.

How cattle are raised varies on farms depending on a farmer's purpose in keeping their herd. Although some of the farmers supplemented their cattle with grain, and some may vaccinate or administer antibiotics to their herds, others had grass-fed and antibiotic-free herds. Although they were the most common livestock to have, many of the farms had other types of livestock in combination with or instead of cattle.

4.3.7.2 Goats and Sheep

Several of the farmers also raised goats or sheep, instead of or in combination with cattle. Goats and sheep are not as hardy as cattle and require extra attention, especially due to their high likelihood of getting worms through their diet. The species of goat or sheep raised may be less likely to have problems with worms, as well as individual animals within the herd may have a greater resistance.

Goat and Sheep Terminology

Buck – unaltered male goat

Ram – unaltered male sheep

Wether – castrated male goat or sheep

Doe – female goat

Dam – female goat who has kidded

Ewe – female sheep who has lambed

Kid – young goat

Lamb – young sheep

Rut – male heat cycle

Figure 28: Goat and Sheep Terminology

There are parasites and illnesses which can quickly take down a single animal, or an entire flock. There has been a system called the FAMACHA system which has been developed to help goat and sheep owners better assess their animal's health. The Famacha is checked through pulling down the animal's eyelid and looking at the color of the inside of their lower lid. The whiter in color, the less iron the animal has in their blood and the more they need a worming medication to help them get control of their worm-load. Mark Hutchinson at Rehoboth Ranch explained the care regimen they use:

> Now if an animal needs more of an emergency type of intervention, we will absolutely give it to them. It just means we'll have to take that animal out of the herd. We can't, once we give it antibiotics, we can't really go back. Worming is one exception. We're up front with the customers about this. If we need to worm them, we worm them, and we'll use a conventional wormer because I don't care what they say; all these natural wormers do not work. They do not work if your animal gets parasites. The trick is to keep them from getting them to begin with.

Mark also told me that they breed different species of goats together to try to increase their worm resistance through hardier genetics.

A few former goat farmers mentioned the difficulty of predicting the animal's health as their reason for no longer raising goats. We discussed some of the tips I have learned, such as giving the goats a pill of copper bolus to help prevent worm infestations (the copper sits in one of their stomachs and works to prevent worm growth internally). Although the farmers were interested in the method, they were not usually swayed in their decision to stop raising goats.

Unfortunately, as I was writing this, my favorite goat on our farm got sick and we lost her within 36 hours of her first showing symptoms. Her rapid demise coupled with her being one of our healthiest goats, and me developing a relationship with her in efforts to milk her, made the loss the hardest one for me to take so far on our farm. We do still hope to one day pursue milking

some of our goats, but I now understand the lack of interest in continuing the pursuit after such a grim loss.

There were other reasons farmers stopped raising goats or sheep. Mark Hutchins used to focus on the dairy goat side of the operation at Rehoboth Ranch. However, he told me that since he has taken over as primary operator of the entire farm, there is simply not enough time to focus his attention on the dairy operation. Although Mark would have liked to continue, he described his decision, “we could not do that and everything else. It was a good time to just take an iron out of the fire is what we tell people. It needs to be a full-time job for somebody.” Rehoboth Ranch still does raise meat goats.

Deb Terrell has a small herd of six dairy goats. The commitment with six is still substantial, Deb told me “dairy goats take a lot of work” and then warned me that kidding is not as easy as all the books make it seem. There are several breeds of goats, like Deb Terrell’s Lamancha goats, who will kid and then stay in milk for several years before needing to be bred again for more milk production. This type of breed is preferable to dairy farmers.

There are a few differences to the way breeding works with goats and sheep as opposed to cattle. Bucks and rams will go into rut in the fall, and the male heat cycle causes them to be overaggressive and sometimes dangerous. This lasts for about five months. If the bucks or rams are kept with the ewes or does, they will breed with the females whether the females are in heat or not, which may be a problem if the ewes or does are younger, older, or already bred. The males are also territorial and may be dangerous to other bucks or rams when in rut, although wethers (castrated males) are usually kept with bucks or rams with minimal problems.

Does and ewes are pregnant for roughly five months. If milking, females are dried up prior to breeding. Both types of animals commonly have multiples, with two kids or lambs the

most common amount born. Goats are commonly separated to kid while sheep do better to stay with another sheep or two to lamb.

Although goats and sheep require more attention to raise, some farmers prefer them due to their demeanors. As browsers of forage, goats can be raised in combination with cattle without competing for the same food source. Sheep browse but also graze on grasses, but they require little in comparison to cattle. The other type of livestock I saw, pigs, can severely damage pastureland if not properly managed.

4.3.7.3 Pigs

Pigs were the least common livestock found on the farms that I visited. Rehoboth Ranch is the only farm that raises pigs that participated in this research.

Pig Terminology

Boar / Hog – unaltered male pig

Barrow – castrated male pig

Gilt – female pig

Sow – female pig who has farrowed

Piglet – young pig

Figure 29: Pig Terminology

As discussed previously, a large part of the reluctance to raise pigs in North Texas is due to the presence of wild boar in the area, especially if a gilt or sow is in heat. Another part of the reluctance is that pigs will root, or persistently nudge and dig into the ground with their snouts. Rooting is natural behavior which pigs use for comfort, communication, and to find food. Mark Hutchins explained their process for managing pig rooting, “we'll put them in one paddock for a week, let them - once about the time they've kind of grazed off the grass and started actually root

into the ground, we'll move on to the next paddock and just keep rotating them around." In this manner, they continually allow the grazed paddocks to re-establish any damaged roots and grow back before the pigs return.

4.3.7.4 Considerations in Raising Livestock

There are many considerations for which type and how many livestock animals to keep on a farm. Although a main benefit to raising livestock is the profit that can be made, there are other advantages to keeping livestock. When properly managed, livestock grazing can regenerate pastureland, and waste from livestock can become fertilizer for plants when properly composted. The small stewardship practices and relationships between the farmers and their livestock and their concerns over the animals' well-being worked differently on the local food farm level than the industrial model. The practices that I learned serve to ensure the farmer gets the biggest return on their investment into raising livestock while also creating layers of value within the animal products that they sell.

4.3.8 Soil, Grasses, and Hay

Some farmers mentioned replenishing the land or soil as a method they use to benefit their crops or animals and the environment. Andrea Gorham at Tree Folk Farms sees their farm's relationship with the land as "beneficial for sure. We are definitely building up organic matter and doing what we can to prevent it from eroding. So, in the sense of more things being able to grow, I think if we left here, right now it's going to be a lot richer and things will thrive." Through composting and adding organic matter to their land, as well as the methods of designing their land to mimic nature, Tree Folk Farms is helping the soil through their methods of farming.

James Hunter at Paul Quinn College ran through a list of pros and cons to each type of method that he may use. His approach had these basic steps:

> I'm trying to just think about what I'm doing. I'm trying to…So, I'm like, okay, I'm going to grow cover crops. I'm going to try to break up the hard pans in the soil and then try to add more organic matter into it. I'm gonna compost what I don't use. I'm going to feed the chickens and good natural diet full of crop residues and vegetation and I'll let them free range when I can, you know.

These were the first of many considerations that James listed going into each step that they use to cultivate the market gardens at Paul Quinn College.

Mark Hutchins at Rehoboth Ranch discussed the regenerative grazing methods that they use help improve the land. When I asked him how they know when to rotate their animals and what type of a schedule he is on to create regenerative conditions, he explained that it was both a science and an art to properly rotate the animals:

> It's usually common that you're going to be moving them on a schedule. And so right now when we have very little grass, most of it is just some kind of standing hay, with some green growth underneath it, we'll be moving them every day because we don't want them [overgrazing]. And in a couple of weeks, we'll feed them hay for a couple months while the grasses come back in for spring.
>
> [We] put a lot of animals on a small area for a short amount of time, putting a lot of fertilizer back on that soil, tromping down a bunch of grass that they're not eating, which causes it to come back, oftentimes to sprout a second shoot to the one that was sprouted down, that came up originally. So, you'll come up with two shoots which will increase the density of the forage. Then you let it sit for a long period of time while it gets past the crucial growth periods where it's absorbing most of its reserve nutrients and energy from the soil, allowing it to get past that time and replenish that store to its root system. And then your grazing it and repeating the cycle. So, it's just a matter of leaving it alone when it's most vulnerable to damage, and then grazing it when it's ready to be a grazed.

Although this system of grazing is effective, nature may change the circumstances of growth and replenishment. Mark Hutchins recalled the conditions in the previous year that caused him to have to split his cattle herd's grazing:

> A fairly normal but kind of dry spring. Plenty of grass but not tons of extra grass. Then we had the scorching hot June and July. That just killed everything for a while and then nobody could cut hay, which is why hay is so expensive. Then it started raining and wouldn't stop raining. Grass needs water, but it doesn't need a puddle, and it doesn't grow on a puddle either. So, you can over-saturate the ground to where the grass is growing,

> but not growing as much and then the grass itself is just more watery… the fiber ratio is not quite right.

A large part of healthily grazing pastureland is close stewardship of the land; watching how it is growing to tell what it can sustain.

Mark Chapin's original interest in growing native grasses, and then producing hay, came through trying to find what his land in Chico could sustain. As he remembers, he went to his local agricultural office for help and directions of what type of grass to grow, but they only suggested growing Bermuda grass, with not much support or information on native grasses. From there, Mark began to independently research the types of grasses that historically grew in north Texas, and then he found and joined the Native Plant Society and Native Prairie Association to help further his knowledge.

As Mark learned about native grasses, he began to gather them when they were seeding in the fall from roadsides and highway medians. After he planted the seeds and began to grow his own native grasses, he began to cut hay. Mark explained to me the process of cutting hay; the grasses first must grow tall enough, and then the weather needs to be favorable for a few days or a week, because the hay must dry for a time after it is cut or else it will mold in the bale. After cutting the hay, it is raked into windrows and baled using a round baler. Finally, Mark wraps the baling twine around the round bale, and it is dropped from the baler onto the field until all the hay is baled and ready for storage. Of course, there are always equipment malfunctions and weather changes that make the process more difficult. The production of hay is relied upon heavily by all farmers with livestock, and the quality of the hay can affect animal health.

Today, Mark Chapin is an expert in the area on native grasses, sometimes giving talks at North Central Texas College. He has also won the Denton County Hay Show two years in a row. His pursuit of restoring his land through focusing on native grasses has made other farmers in the

area realize the value of growing native grasses like bluestem, to both withstand drought and increase health in livestock.

Local farmers in north Texas have market gardens, orchards, apiaries and greenhouses. They design environments, raise poultry and livestock, regenerate their land, and find ways to mimic nature. They adapt to the climate and to the soil. This picture of local food farming is quite different from industrial agricultural methods. The agricultural methods that these farmers use stand as a form of knowledge, which I refer to as climate adaptive ecological knowledge (CAEK), which serves to preserve and advance sustainable or regenerative agriculture.

The methods from CAEK both preserve the history of agriculture and advance agriculture away from the pitfalls of the past. They preserve history using agricultural methods commonly used prior to industrial agriculture and the green revolution (discussed in section 2.1.4 Recent History and the Domination of Industrial Food), methods that are not common knowledge to people outside of agriculture. They also incorporate technology and advancements which are oftentimes “green” or sustainable and beneficial to the environment in multiple ways.

Although methods of planting crops and raising animals are the focus in farming, they are not the complete picture of what it takes to run a farming business. The business methods used by the farmers that I interviewed heavily influenced their farm’s success. Turning now to the local food farm business model; the demands of running a successful farm business take a different skillset than the demands of working the land.

4.3.9 Business Methods

The business side of farming represents an altogether different aspect of farm survival. Although there were many different business models that I saw, and most of the interviews’ foci were on farming methods, there were a few exceptional approaches to business of note; such as

streamlining production, evaluating efficiency of turn around, building a farm's name, and properly using media to market. I found that farmers who came from business environments prior to farming were more versed in the concerns of returns on investments and overhead as well as business creation.

Many of the farmers had additional infrastructure on their farms to process and package their harvest. Andrea Gorham showed me their processing set-up at Tree Folk Farms. As she explained:

> So, all of our, rinse set up is really mobile. We had these things [rinsing trays] out there and we'll just open this garage and wheel these out to spray off root vegetables or we'll wash our greens in the sink and then we have a fine strainer here and some fans to dry them. So, it's just kind of a mobile set-up to harvest… that's been really helpful just for the whole flow of production, just having harvest areas centralized. And then refrigeration.

By having a harvesting area and a process for production and packaging, Tree Folk Farms has no need for an outside processing company. By keeping the production completely within the farm, Tree Folk Farms lowers their outside expenditures.

While some farmers develop ways to cut outside expenses through streamlining production, others evaluate the entire system of production to develop the best timing for investment and sale to develop their greatest return on investment. James Sullivan's explanation of the stages of investment and return involved in raising chickens shows this evaluation of timing. As he explained:

> I don't breed the chickens. I'll buy the chicks at about $2.50 apiece. By the time I've got them just about ready to lay, they've got, they've probably got $10 in them and I sell them for $20 to $25. Well, a chicken will produce, on average, 200 eggs, which is roughly - What is that, 18 dozen about? Yea, roughly 18 dozen. If I'm making a dollar a dozen that's $18 that I make over time… I'd rather make $10 in six months than $18 in a year. So that's kind of how I look at it.

Before interviewing James, I did not realize that animal investments could be quantified like this. However, after this explanation, I began to understand how farmers calculate estimates of their animal stocking density, even if the other farmers were not using the same language as James.

A positive cashflow on the farm is its most important consideration as a business entity, although how it all works can be extremely hard to weigh out at times. As mentioned earlier, only four of the 17 farmers, or three farms out of 14 were completely dependent on the farm's income. All the other farms had some other form of income through the farmer or their spouse or another family member.

Alternatively, all the economic considerations around farming can lead to the farmer becoming focused entirely on the intricate decisions and possibly missing bigger opportunities. As Mark Chapin told me, "I spend most of my time trying to figure out ways to save money, and not enough on how to make money." The world of a farm with its many parts also creates a world of economic considerations. Considerations like weighing out whether to repair something or buy new, whether to repair something yourself or to hire outside help, whether to keep or to cull animals before a change in seasons, whether to make your own feed, whether to grow your own hay, whether to save your own seeds, whether to make your own compost, and so on, are all considerations that go into the economic livelihood of a farm. While many different farming methods may create a more regenerative and sustainable farm, some activities are beyond the working hours that a farmer has in their body, and considerations of rest and personal care are also necessary in economic considerations of farm livelihood.

As our farm grows and takes on new ventures, we are realizing how important it is to create cycles of inputs from what would elsewise be waste on our farm. Much of our time is spent cleaning and moving things from one area to another, assisting nature in regenerating, and

doing tedious jobs ourselves to match money that would have been spent in our own sweat equity. As we realize the monetary expenditure that comes from not already having these processes in place, and try to quickly fill the gaps in growing our own produce to feed our own animals and learn more ways to become self-sufficient, we learn what our farm's capabilities are and how we can find success in sustainable and regenerative practices.

Moving from figuring out ways to save money and looking more into how to make money; another consideration to build a farm business is building a brand. None of the farmers used the term 'branding,' but the focus some local farmers put on their farm's reputation creates a new form of branding. This new way of developing a farm's name through telling its story works to ensure transparency in production, which most of the local food farmers I spoke with listed as a primary concern in their business. The farms tell their stories primarily through social media and their farm websites, and these stories in turn build consumer interest in the farm and create an understanding of what that farm's name stands for, or a brand.

Mark Hutchins at Rehoboth Ranch told me that they have changed the way they present their business to better show the values behind the methods they use. This presentation of both the method and the worldview creates shared values between the farm and the consumer and leads to a new form of brand loyalty. As Mark described:

> this is a business, but we're approaching it with a certain worldview. So, it's a new thing for us to be focusing on the word regenerative. We've used 'sustainable' before but haven't always felt…like that wasn't exactly what we're talking about because that's kind of relative to, that's somewhat dependent on the resources you have to put into it. Whereas with us, we're really approaching it with a faith worldview. We're Christians and we believe that God made the world. He called it good and he placed us here as stewards of it and that the basic structures and systems - ecological systems are good and functional and yes, they need to be stewarded for theological reasons.

Mark's farm works to regenerate the land because, as farmers, they see themselves as stewards who are here to help reestablish ecological systems. Mark's realization is that the values behind

the creation of their farm help to advertise their methods to like-minded people and generate support.

Presenting a farm's story is not the only way that brands are being built in local food. Ken Halverson at Larken Farms Orchard's focus is on the quality of flavor and freshness that he has produced in the fruit on his farm. Ken has worked out a way to sell his fruits to chain grocers without losing the flavor that he strives to attain in fresh picked pears, peaches, and plums. He told me his way was to pick the perfect fruit the night before and deliver to the local chain storefront. When I asked him why they do not sell to large retailers nationally, he answered:

> We put more into it than that. I want people to enjoy a good peach not a green peach, because that's the only way you can basically do it is... they're going to ship them all over. They're nationwide. I mean, [peaches] they're, they're delicate fruit… And even if you're a strong picker, you know, you don't pick a peach, you twist a peach…If you grab it and pull down, you're going to bruise it up. So, when you grab, you're going to kind of grab it towards the top of the peach and you roll it and then that way it doesn't bruise it all up. And we try to only touch it one time and that goes right from the tree to the box.

Ken's pledge to sell perfect peaches is part of what makes Larken Farms Orchard exceptional, and the reliability of their flavor has generated reliable support from large grocers in the area.

Generating reliable purchases is exactly what Jeff at Profound Microfarms focused on in his first steps into farming. His approach was similar to a small-business startup, as he explained:

> You can do a lean startup customer discovery with minimum buyable product. So, what's the smallest system you can build – which is this one – that can produce the products that go to them and say 'hey, would you buy this if…does it need to come in a clamshell? Does it need to come in a case? And if we give them a case, then how much would you pay for the case?

In that manner, Jeff was able to meet with area chefs who support local food and develop a product based on their needs. Through generating a relationship with chefs in this manner, Profound Microfarm's products were guaranteed a minimum sale even before a large investment was made into planting and packaging the produce.

Profound Microfarm strives to provide a consistent, fresh, and superior product to area chefs. Jeff told me that a large part of that consistency comes from the hydroponic systems that he originally built on the farm:

> It's like the greenhouse controlled environmental agriculture for us is where we get our consistency from. And I think that we might be able to do that in the soil inside of the same greenhouses, but, the living-root product is just such - is a way better product. It lasts longer for the chefs. You're actually still delivering living stuff. So, we harvest those lettuces, the root ball still attached so it can last for four or five weeks in the refrigerator.

From creation through operation, Jeff Bednar designed Profound Microfarms as a small farm business, using his skills in business and marketing to find reliable customers.

Jeff has not just used his business acumen to build Profound Microfarms. When we met for our interview, he told me that he was turning his sights to supporting local food more broadly through applying for a grant to build a local food cooperative. Jeff found himself in a key position to help grow other farm businesses, as he described his role:

> So, I work with a lot of other farmers. I've gotten some real, real good close personal friends that farm - all kinds of different methods. Some similar to us and some traditional soil gardens and some livestock or poultry people. And that's actually the part of the grant we applied for was to start a, essentially a food cooperative organization of other local farms that are all delivering.
>
> I figured I've got this great resource of thirty-something restaurants and chefs that want to buy local, but they can't find the products. And then farmers don't know how to distribute or market, so we can be the people that bring everyone together and say, 'hey, if you're growing chickens, put them on my truck and I'll deliver them to the chefs that want to buy them and I can help you out with billing and the resources and supply chain management kind of thing.'

Since our interview, Jeff and several other farmers were awarded the grant, and Profound Foods was created to be a local food hub that delivers fresh, local produce to area chefs. More innovatively, it provides local food farmers the infrastructure needed to run farm businesses that can compete with large, corporate food distributors.

Working with local chefs also helps to market local farm businesses through listing their farm as the source of ingredients on restaurant menus and in social media posts from the restaurant or chef, spotlighting their creations. This form of free marketing comes at a cost. As Jeff said:

> They're looking for the consistency…When they put something on the menu or like our name is on the menu …they can't serve [produce] from California [instead of my produce] when my name is on that menu. So, like we have to be consistent.

Jeff noted the type of transparency local chefs use to show their local food's origins work to the benefit of building each farm's name and story. In this manner, the local food farms are further transformed into brands through the chef's desire to ensure transparency in the representation of the farm-to-table dining that they seek to create.

Mark Hutchins said that social media was his main way to ensure transparency. He described their purpose in interacting with customers through social media:

> We want to use social media as much as possible just to take pictures and videos of the animals and put them on up there. And so, even if they can't physically make it out, at least they know that – 'Oh yes, they say they raise beef and sure enough there's a herd of 90 to a hundred cows out there that he's moving, so... I mean if they're fooling us, it's certainly an elaborate prank.'… Transparency is way, far and away the most important thing because there's room for different production models and disagreement about what's best and what's the right balancing.

Mark's way of showing his customers daily life on the farm advertises his business without any additional effort on his part beyond documenting life on the farm. At the conference I attended, I noticed that many local farmers are using social media to build their farm's brand, because no matter their target market, they can likely be reached through social media.

Social media is also a great marketing tool for local food farmers due to the aesthetic quality of the farming life. Paintings, sketches, artistic representations, photographs, and now social media posts of farms which use many of the same methods I saw on local food farms are

aesthetically appealing and have been throughout history. The transparency and method of portraying the farm's story through social media serves to generate business for the farms through appealing to aesthetic interests of social media followers and possible consumers. Instagram, a social media application which focuses on photos and visual sharing, was the most common social media platform actively used amongst the farmers I interviewed.

The business methods that farmers were using to build their farms worked in multiple ways to benefit their farms. These techniques for streamlining business processes combine outside business sense with local food farming methods. Pursuing marketing and reputation building tools that build and tell the story of the farm's business name work in the same way as the methods used to grow the food; each aspect adds multiple layers of value.

Before conducting this research, when I thought of farms today, I did not think about the business aspect of farming. I am not sure if this was due to the food corporations taking a place as a gatekeeper of food exchange in my mind, or maybe I just never thought about what a farm did to run as a business. The realization that local food farmers have to find ways to market and build their business beyond the crops or animals that they raise shows how even someone like me, who studies food intensively, really has no clue about the inside world of something like farming without speaking to the people who actually do it.

CHAPTER 5

ANALYSIS

The farming and business methods that local food farmers use help to illustrate what daily life might look like on a North Texas farm, but they do not do much to explain why. Although it is easy to see the actions and behaviors that local food farmers use to generate success, these methods are not the whole picture. The underlying questions of how and why this group of people have chosen to be local food farmers and how they interpret and react to the challenges to their success should be evaluated to better generate a holistic view of local food farming in North Texas.

5.1 The Question of Success

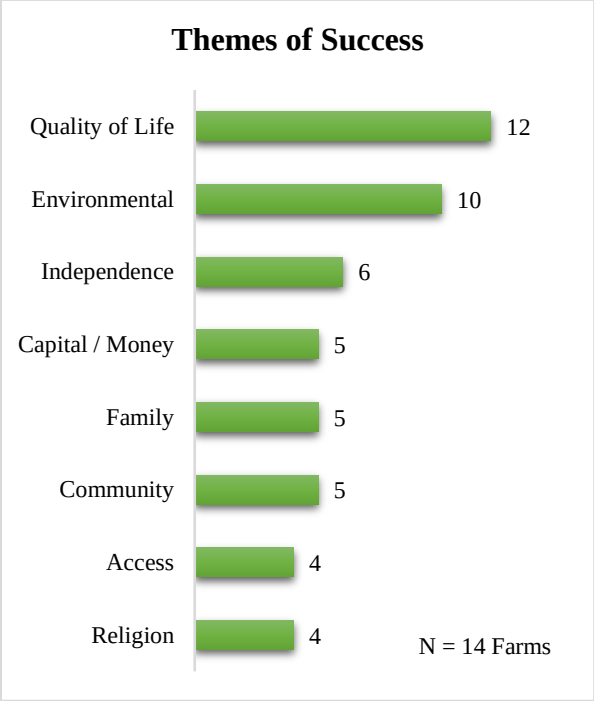
Turning back to the original question of success, and what exactly makes local food farmers in North Texas successful; there are many ways that question could be answered. The short answer is that they find ways to be successful through farming and business methods so that their farm can create a product to sell and to generate a business name to gain brand loyalty from consumers. Although that answer may seem like a valid response, it does not really answer the questions of success regarding what motivations and successes keep local food farmers farming. To generate a complete view of success, it is important to understand the values present in the way local food farmers interpret success and the motivations for the entire network to participate in the local food system.

5.1.1 The Values of Success

The best way for me to understand what has made local food farmers successful in North Texas was to ask them what they considered success and look at these definitions of success in terms of which values they represent. Although each person gave unique responses, I found that

several themes were common throughout the interviews. These themes represent areas life values are focused on. Although quantification of responses is risky in applied work, because a farmer may have just forgotten to list a value during the interview, Figure 30 represents the aggregated values the farms portrayed throughout their responses to my questions about goals and success.

Figure 30: Themes of Success



The most common theme of success, or the most important value, was quality of life. Most of the farmers who I spoke with were not looking at success as an end-goal, although they did have goals to meet which would make t heir quality of life improve. Overall, living the day to day life and being successful, or able to support the farm to be balanced with an admittedly hard-working (but not exhaustive) life was the main way local food farmers interpreted their own success.

After living on a farm and working with nature for a few years, I completely understand why, and I see how hard this value may be to convey to others. It goes along with the value found in using mindfulness as a form of meditation or the gratitude felt in finding appreciation in

the little things. The farmers with whom I spoke interact with nature in a way that they come to rely on it, to support it, to watch it grow, and to realize how it supports them.

Many farmers spoke of success as something that they need to maintain, not attain. As Michael Ashford put it:

> Success for me would be able to have built my own house. I have a little house back there. Go on vacations. Just generally have a decent living doing this. With that, I don't think you have to make as much, you know, out here I think.

A consistently flourishing system is something that shows success in a way that may be hard to understand to those with different systems of value.

There is a certain appreciation found in each daily farm activity for me, or else something is wrong at the farm. As I gather eggs, I find it incredible that the birds I raised from ducklings are now helping to support my family. As I watch my goat kids grow into young does and bucks, I am fascinated with their beauty and proud that they look healthy, can be handled safely, and are growing as they should. As my cow's bull calf grows and she shows her abilities as a good mother, I am thankful that everything is going as it should, and the considerations for how we can train and grow our herd make me optimistic of the possibilities at hand. The crops growing and our soil improving gives me a sense of life and new beginnings, and harvest brings a sense of pride and thankfulness to the effort that was put into growing and supporting the natural world. Even seeing green grass for our animals to graze on during the winter gives me a sense of peace and satisfaction that is as close to success as I can describe.

Another slightly elusive aspect of success rests in the way environmental success is seen by farmers. During the interviews, I asked farmers how they define success for themselves and their farms, and only three farmers outright said that they found success in the health of the environment. Rather, the health of the environment was so intricately entwined with each

farmer's day-to-day life that their focus on the environmental success of their farming was obvious when they would discuss their methods and the trials they went through to be mindful of their impacts on the environment.

The next type of success or way that farmers saw themselves as successful was in their own independence. I found independence to be a personality trait in many of the farmers, and they valued farming because it allowed their independence to thrive. As Jeff Bednar of Profound Microgreens put it:

> I would not be happy doing something that I was not having fun at, that [I] would not be able to stay focused on. Like I've literally been fired from every single job I've ever had. I'm not a good employee and that was not successful as an employee because I just couldn't. I didn't function well in any kind of employee environment ever.

Hearing Jeff's statement of his need for independence and seeing the way that Profound Microfarms thrives today, it is obvious that farming is a great avenue to support Jeff's independence.

A few other farmers mentioned always having an affinity and an understanding of the environment. Through the growth of the local food and farming community, these farmers saw that they could use their preference for the outdoors to be independent, when they never thought that would be possible avenue before.

The values of making money, having a healthy family, and having a healthy community were equally common throughout the interviews. A few of the farmers, like Jay and Prisca at Day Dream Farms, mentioned that their want to make money was linked to how it would increase their ability to better support their families and the community around them. It is impossible to say which of these values has the most importance to each farmer, because I did not have a question that had them all to compare in the interviews.

The value of increasing access was also stated several times. The concern of increasing access as a goal to determine success may have more to do with a farmer's socioeconomic status and history than any other value. As was my case, the farmers who mentioned access as their focus in selling their goods had a history of having a difficult time accessing fresh foods themselves or of interacting with communities who had that problem.

Finally, several farmers stated their religion and being a good steward are intricately linked and explained that they are being devout through being successful farmers. I did not have a specific question in the interviews about religion, so it is impossible for me to know how many of the farmers approach their lives in a religious manner or the relevance of religion to their daily lives. The religious aspect of a farmer's value-system was also tied into the rest of their views of success so intricately that separation of these values through analysis seems almost profane.

The views of success that farmers shared throughout the interviews reveal a different system of values than the flat capitalist ideal of monetary success. As was discussed in section 2.2.1 Commodification, capitalistic commodification removes the history and identity of a food to make a purchase purely transactional. By looking at success through the values farmers are seeking, the worth of local food and reasons for the growth of local food farming starts to become clearer. Another area that helped to show more aspects of value systems was asking the farmers if they could name an unexpected success.

5.1.1.1 Unexpected Success

Although many farmers could describe to me the goals they have in place to reach what they consider success, thinking of an unexpected success was more tricky. Most farmers had to pause and think about my prompt to describe an unexpected success, and a few of the farmers were unable to think of any unexpected successes, only successes that they had worked hard to

attain. Some of the farmers answered that their unexpected successes had to do with the high price that their land has risen to, or that they receive mineral rights. Others said that adaptive successes were surprising, due to their good fortune in raising or growing those animals or crops, despite others in the area telling them that they would fail.

The most interesting, and most common unexpected success was the consumer response that farmers found for their products. There is a growing appreciation for locally sourced foods in the area, and the level of appreciation and commitment in some neighborhoods was surprising to me when I first found it. As Jeff Bednar related to me, finding the interest he was able to find from the chef community gave him a newfound appreciation for the creativity working with chefs added to his job. As he explained, it changed some of his plans, "I planned on doing some other stuff, but then the turn was they're buying everything, so let's grow more and more and they're buying everything I'm growing, so let's grow more." The fact that farmers were able to sell their produce was not the surprise, it was the passion and appreciation that their products generated that was unexpected. These unexpected successes in consumer response represent a joining of values between the farmer and the consumer. These shared value systems are also apparent in looking at the motivations for participating in the local food system.

5.1.2 Motivations to Buy Local

5.1.2.1 Consumer Motivations

During interviews with local food and farm supporters, I asked what their motivations were for shopping from and interacting with the farmers' market community. The responses were combinations of the individual motivations listed in the chart below, the number of times each motivation is listed represents the number of interviews where this was mentioned as a

benefit. The motivations to buy local show the values consumers are seeking in purchasing local foods.

The most common reason given to buy local is that local food is better food. Several of the local food and farm supporters said that they think produce that is grown and harvested when it is supposed to be in season tastes better to them, and others said that the freshness and natural growing methods are why they believe local food is better food. Although it may be reinforced in the farm-to-table trend, the number of chefs in the area who prefer local food weighs in favor of there being superior qualities present in local foods.

Figure 31: Motivations to Buy Local

Interacting with and supporting the local community was the next most common reason given to shop at the farmers' market. Most of the local food and farm supporters also said that when they would visit new areas, they go to the farmers' markets to learn more about the local community. It seems that there is an interest in knowing more about the local community common to local food and farm supporters and in helping it to grow. The farmers' markets are seen by some of the local food and farm supporters as a core of the community around them.

Environmental reasons for supporting the farmers' markets stemmed from consumer knowledge of the pitfalls of industrial agriculture and reducing their carbon footprint. Concerns over transportation costs and packaging were listed as reasons to resist shopping at large grocers. Reducing waste was also mentioned as an environmental benefit that is present throughout the local food system.

Childhood enculturation, or visiting markets when they were children, was also a common response to why the local food and farm supporters visit markets today. Beth Dods related to me that her own grown children visit farmers' markets regularly where they live today, and others mentioned going to markets like they did when they were living with their own parents, growing up, as something that their families have always done for amusement. An interest in buying food that is local and fresh is a different type of shopping experience, and many who grew up visiting farmers' markets prefer the interactions and relationships found at the market today.

Health was also given as a reason to shop at the markets, although the health aspect was almost always mentioned after every other reason. Natural growing methods strive to grow fruits and vegetables with minimal use of chemical and pesticides. This was mentioned by a few as a benefit to the produce found in farmers' markets, but not listed as their main reason for shopping there. In contrast, several of the farmers noted that their customers were more interested in health benefits than anything else. These farmers described their customers as mothers with small children or the younger generation interested in self-care. The discrepancy in these responses may be explained through my lack of ability to interview any young families, as they were always too busy at the markets to talk.

5.1.2.2 Assumed Reasons for Support

When I asked farmers why they thought their consumers support them, most of their answers were similar to the answers from the local food and farm supporters, but there was a key difference. The first and most common response farmers gave was the transparency found in their relationship around local food with consumers. Every farmer spoke of the importance of knowing where your food comes from and knowing how it is grown. I found it interesting that this response was not given directly by the local food supporters, although when I read back through our interviews, I saw that it was consistently implied as a benefit to the relationship. It is possible that the question I asked was worded so that the supporter was trying to define why they support the farmers, not how the relationship is beneficial to them both.

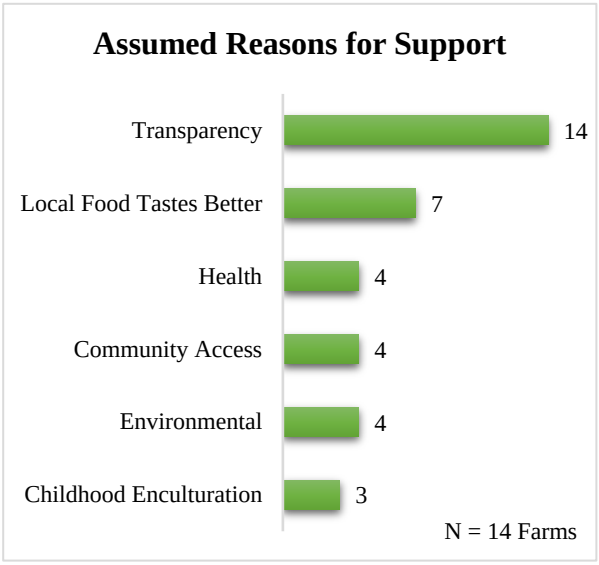


Figure 32: Assumed Reasons for Support

5.1.3 Motivations to Farm

The final area that informed on my understanding of local food farmers' success was found in the original motivations farmers have for participating in the local food and farm system. These motivations are intertwined with views of success, like independence and reinforcing family values, so much so that discussing them again here is not necessary. There is

one difference that I found when discussing motivations to farm that seemed a value worth noting. Bill Hartley drew my attention to it when he discussed interest in beekeeping. As he explained: “I think there's a real altruistic vein in beekeeping in general. I see a lot of people who want to do it because they feel like they're doing something for the environment or getting back to nature or it's just a sort of a way people can participate in farming - participate in life. Contribute.” Although the term “altruism” seems slightly incorrect, it is the closest term I can find to describe the purpose farmers find in farming and their want to participate in local food.

The altruistic nature of these farmers should not be confused with optimism, because many of the farmers were quite realistic about the challenges that they face. This form of altruism comes when they discuss their methods or their reasons for farming – everything that they do to farm does not only benefit their own farm but also helps the world around them. It may be a different form of understanding that comes from interacting with nature in the way that local food farmers do, because their engagement shows them a different way to evaluate the consequences of their actions and their pathway to success.

Farmers like Mark Chapin are taking that altruistic interaction with nature a step further and experimenting with things like creating *Terra Preta* to rediscover ways to restore the soil for years to come. As he succinctly put it, “we could change the climate if we changed the way we farmed.” Many times, seeing this sort of direct action to make a difference made me stand back as an academic and ask myself what my own role is in learning about these things, and how I can help the rest of the world to see the ways we can all work to do more.

5.1.4 Value Systems

It would be impossible to list all the values present in each farmer’s motivations and views of success. The list of values found in local food (Figure 33) was generated through

analyzing the interviews. Individual motivations are nuanced and there are many ways that personality and history, or nature and nurture, may change a person's views of success. These values become value systems in the way they differentially weigh on a farmer's decision making, their image of self, and their interpretation of their own role in the world.

Values Found in Local Food:

- Altruism – methods used which benefit the greater good (environment or community)
- Capitalism – the free market system, competition, ideas of development and progress
- Community / Social – the health of the community or group
- Domestic – family and spouse valued most, decisions support preservation of family
- Independence – the need to work for oneself or be your own boss
- Environmental – concern over effects and amelioration of the environment
- Health – preservation of health through diet
- Accessibility – providing foods to certain communities, food justice
- Religious – doing what the creator put here to do
- Profit Centered – profit and cost of producing goods and produce determines price

Figure 33: Values Found in Local Food

An interesting aspect of these values is that they are the links that farmers find with consumers that create value around the goods and produce that they are selling, which will be discussed in section 6.1 Taking Back the Meaning of Food. All the values listed below are present in the local food and farming system. The most compelling part about this list of values is that many of the problems found in the industrial food system in relation to each value can be remedied through local food.

5.1.5 The Local Food System Today

The local farmers in North Texas are contributing to a local food system in many of the same ways that larger food producers contribute to the industrial system. They focus on taste, they preserve, transport, standardize, and package their food for sale. They are concerned with food safety and continually attend training to be sure they follow regulations. They also pursue different forms of supports, including governmental, to help generate infrastructure, make changes, and to insure themselves against loss. When industrial farming began to pursue ideas like the Green Revolution and GMOs, local North Texas Farmers looked to other methods to generate sustainability in farming and later, regeneration of the land. As technology progressed with new farming methods integrating into technology (row planting, irrigation systems, methods of extending harvests) many local food farmers decided for themselves if the investment was worth the change. The farmers in the North Texas local food community today also embrace diversification on their farms and explore the new trends into things like agritourism and farmer and chef alliances.

The farmers interacting with the local food and farming system have a different kind of understanding to how food works. These farmers have an advanced understanding of the world of food and farming in terms of regulation, history, microenvironments, the health of the land, and the many barriers present to local farmers. They look at the world of food through an understanding of the problems in the system, and they work through their expertise in farming and from other fields to solve the problems they find in the local food and farming network.

The best term I can find to describe these farmers is “Agricultural Masterminds” due to their use of climate adaptive ecological knowledge as well as their ability to navigate their farms place as an alternative to the industrial food system. While these farmers had several different

approaches to their methods of farming, and had different value systems between each other in respect to things like religion, family, or access, they had a common understanding of the big picture of food and farming and how their role as farmers works within it. These farmers learn daily about food and farming and are completely aware of their role in the local food system and its impacts.

The Agricultural Masterminds already have an understanding about the history of agriculture, and they already see how the values present at the market are transformed to solutions to the daily problems of consumers. They understand the power structures around industrial agriculture, and they know much of the history that was discussed in section 2.1 A Brief History of Food in the United States Through Changes to Supply and Demand. I found, as an academic, the local farmers I interviewed were as knowledgeable or more about food systems and the way agriculture has change. Many times, they would mention podcasts or tell me to read something during our interview which would change my own understanding of this research.

Additionally, many of the Agricultural Masterminds bring expertise from other fields into their farming businesses. Some of them use their ability to excel at crunching numbers to generate the most profit while incurring the least expenditures over short- and long-term business cycles. Others know how to influence advocacy in order to gain a more powerful position through policy and to reinforce their own and their community's rights. Still others pursue different avenues to market their farm's chosen methods in a way that adds value to their product and amplifies their farm's chances of success.

These farmers are aware of all the implications of what they are doing as small farmers, and the ways that they are being scrutinized for both their crop yields and their ability to repair or destroy the environment. This knowledge was the most interesting discovery for me, because it

shows that farmers already know many of the facts herein and are already working to change the problems in the national industrial system through creating an alternative. This discovery changed this research, because I realized that as an academic, I would do better to learn from them and show others their methods to success than to try to change or influence what they are doing.

5.2 Challenges to the Local Farming System

All the farms described, and methods explained in Chapter 4 Exploratory Research may make it seem as though farming is an easier life than it truly is. Although Chapter 4 Exploratory Research shows many different adaptations and best practices used by area farmers, there are still innumerable challenges that a farmer must face. There was not one farmer who claimed that what they are doing is easy, although many of them have found ways to better enjoy their hard work. The challenges that local food farmers told me were their hardest run the gamut of possibilities for failure. Through the analysis of these challenges, a greater understanding of motivations and ideas of success can be reached.

5.2.1 The Challenge of Resellers

The first and most impactful challenge to local food farmers, especially those selling at farmers' markets, are "resellers." I must admit that it took me several interviews and interactions to finally realize the gravity of this problem, and exactly what is meant when local food farmers say "resellers" or "producer-only" in relation to the people who are selling at farmers' markets. When I finally realized what was going on, I saw the many ways that the presence of resellers in the local farming system creates levels of concerns and barriers.

A "reseller" is a person who sells goods and produce that is not grown or produced locally under the guise that it is local food. The process is for the resellers to buy the goods and

produce from a wholesale location, at a bulk price, and to package them as farm-grown produce to sell at the farmers' markets. This is seen by both the local food farmers and the local food and farm supporters as a devious and disreputable business practice. Many of the farmers said that they only would sell their goods at "producer-only" markets, or markets that verify the farmer is true to their word by vetting each farm, up to and including visiting farms selling at the market on a monthly basis.

The deceitfulness of resellers is a huge problem, namely because one of the largest farmers' markets in the DFW area supports and reinforces the practice of reselling. Amanda Vanhoozier explained to me that she had worked with that market because they wanted to try to become producer-only, however the level of intransigence in the market was so interwoven with the community and history of the market, that changes to how the goods and produce were sourced were met with anger and vehement rejection by some older consumers. Additionally, the resellers, who have been selling into that market, some for generations, were having their livelihoods threatened with the proposed changes. The reaction from both the community around reselling and some of the market's board was enough to make the market unable to become producer-only. Ultimately, Amanda severed her relationship with them to become a blogger and local food advocate.

The problem of resellers from this particular market is two-fold. First, the large market allows resellers as vendors in their market booths, however it presents itself to the public as a farmers' market that is carrying locally sourced goods and produce. The people claiming to be farmers are not truly farmers, they are people who purchased the produce as a pallet off of a shipment and repackaged it to make it appear that they grew it, so that they could sell it to local food and farm supporters as local food. By doing this, they can offer the consumer a 'better deal'

for their local food, because their 'farm' did not face the challenges that a true farm may face. Not only does the presence of resellers harm a true local food farmer's livelihood, but a consequence of local farmers talking about the problem is that it makes the entire relationship around local food questionable.

The second problem presented by this large market allowing resellers is that it also creates the problem for other markets. Several nights per week, the large market serves as a different type of market – a wholesale market receiving shipments of goods and produce from across the United States and selling them in bulk quantities to buyers. Although this business is advertised as a farmers' market, many local food farmers regard it as off-limits due to this practice of aiding resellers in the area.

The process of wholesale distribution in general is not a problem, there are many business-to-business markets that run in this manner to better facilitate distribution. However, this specific location existing as a "farmers market" while engaging in these practices of wholesale distribution is enough to make most of the local food farmers that I interviewed avoid all contact with the market. Although the farmers did not always use the term integrity, this is the best way to explain why they may not have participated, it compromises the integrity of their success and motivations to farm.

As I discovered more about the problem, I added a question to the interviews, asking each farmer or local food and farm supporter if they had heard of resellers and their thoughts about the practice of reselling produce. My question was often met with a pause and then careful explanation of the difficulties that the presence of resellers presents. One of the hardest things is figuring out if a farmer is a reseller or a true farmer at their booth. When I asked how I could know the difference, James Hunter explained:

> The telltale signs are look at what people are growing seasonally, okay. Look to organizations that are auditing their farmers. If you have a farmers' market that isn't visiting their farms at least twice a year, then they're not truly looking into that. I would encourage farmers' markets to visit their farm every season, make three or four visits, talk to them and then talk about what people are growing and posting that. Because there's not a single north Texas farmer that had a ripe watermelon in mid-May. That's just the bottom line. Yet that large farmers' market was full of watermelons in May.

He went on to say that, as a consumer, it can be nearly impossible to tell sometimes, and that finding farmers' markets that audit their farmers is really the best way.

Farmers' markets that do not make sure the people selling produce are truly farmers are not the only places where reselling is a problem. Ken Halverson pointed out to me how local cities have festivals that celebrate local fruit, however their produce is likely shipped in. As he detailed:

> They got that big peach festival – which, it was just a week or two, or maybe it's coming up. But they tell you all those peaches are from the local county? But they're not. Peach farmers are all gone up there. They can't sell that. You can't make that many thousands of peaches for one weekend. But what makes me upset is they won't buy our peaches there. These are all Georgia peaches that they buy. That's kind of trade secret right there, but I say just it's a shame because people are fooled.

Ken was among several farmers that seemed surprised when I told him that local food and farm supporters were also upset about the lack of transparency in these transactions.

According to the producer-only farmers' markets in the North Texas area, farmers are considered local food farmers if they sell their produce within 150 miles of their farm. There are quite a few challenges to growing in North Texas, as will be discussed in section 5.2.2 The Challenge of Life on the Farm, so there is a common struggle shared by the farming community. Some of the farmers may sell their goods and produce to several markets in the area, and to do this they will hire local food supporters to help them sell at multiple booths. The food being sold at those booths is still from a farm within a 150-mile radius. The practice of local farmers hiring employees to help them vend to local markets is common and seen as a sign of a farm's growth.

Resellers also affect the ability for a farm to grow in this manner, because any lack of knowledge can now signify a possible reseller. As a reaction to this, ensuring transparency has become more important amongst local North Texas food farmers as will be discussed below.

Resellers may not be the most extreme challenge that local food farmers in Texas face, but they are the most frustrating one. Amanda Vanhoozier left that market and became a blogger and local food advocate. Her blog, JustPickedTX, not only highlights local food, but it is also an independent source to find vetted local farmers in the area, because she has created a map of farmers and markets which maintain local food standards. In the end, the development of relationships between local farmers and their customers is one of the only real ways to preserve the integrity of true local food networks.

When I discussed resellers with local food and farm supporters, only two of the supporters had a strong working knowledge of who resellers are and how they impact local farmers, five of the supporters knew of the existence and some details of resellers, and two supporters had no knowledge of resellers within the local food and farm system at all. This discrepancy in knowledge around resellers may better explain the difference in farmers' assumptions for local food consumers' reason for support, discussed in 5.1.2 Motivations to Buy Local.

There are several ways that local food farmers can avoid having to interact with the problem of resellers in the system. The main way is through selling at producer-only markets, however, through agritourism and other forms of farm outreach, farmers are also finding ways to make stronger connections with local food consumers. The presence of resellers creates a greater need to build community locally.

An interesting observation about the Resellers is while the resellers are considered a detriment to the local food network, their presence is not against the law, and the process that they are following to buy bulk and sell at retail is an accepted business practice in many fields. In truth, it is only through looking at the values and motivations present in the local food network (see 5.1 The Question of Success) to understand why resellers are considered such a corruption to the system. The presence of resellers debases the values and motivations of the local food farmers and creates a situation where the farmers must work to ensure and preserve transparency. Perhaps the greatest consequence of resellers in the local food system is that they present a false solution to the problems of industrial food through their guise as a local food farmer. As will be explored more fully in 6.2 Taking Back the Meaning of Food, the process of capitalist commodification is also at work here – resellers take advantage of the lack of consumer knowledge of seasonality, and other cues to look for in seasonal, local food that may expose the food as not grown locally, such as the peach festival mentioned earlier. While resellers are a frustrating presence in the local food and farming network, their presence is being addressed through consumer education and the creation of producer-only markets. The Challenge of Life on the Farm presents more consistent and unavoidable challenges to a farmer's success.

5.2.2 The Challenge of Life on the Farm

Life on a North Texas farm can be quite tumultuous. The climate and weather events in north Texas make it a place where adaptations are necessary in order to have a farm that will endure. The weather affects raising animals as much as growing crops, and for some like retired dairy farmer Arthur Downe, the weather is the biggest challenge they have in farming. In addition to climate challenges and weather events, there are also limitations to each farmer's physical environment and concerns over the native biome and how it may affect the farm

negatively. Day Dream Farms, Aunt Sue's Barn, and Nature's Circle all listed native animals and insects as their greatest concern, although each instance was specific to each farm. The last challenges mentioned in Life on the Farm were life challenges which rely or interact with farming, causing challenges that were already present to become magnified.

5.2.2.1 Climate and Weather Events

Due to the harsh climate and extreme weather events which frequently occur in North Texas, farmers must adapt their methods of planting. Many varieties of plants are often planted, along with the use of several different adaptation strategies throughout each growing season. Many farmers would also consult or work with other farmers in the local farming community during times of losses due to extreme weather or prolonged harsh weather, to help each other overcome disasters.

Even in greenhouse growing conditions, a slight loss of power at the wrong time can be catastrophic. As Loretta Messinger at DFW Aquaponics noted:

> It's mother nature. I mean, it's plants. Things go wrong. Like when I told you our electricity went off a few weeks ago, we weren't out here. The power shut off about 10:30. My husband and I came out in the evening. The big greenhouse had hit 118 degrees; lettuce bolts at ninety.

Because of that loss of power, DFW Aquaponics could only attend one market (instead of three) that weekend since all the rest of the lettuce was lost.

Mark Chapin brought up the fact that many years of experimentation and hybridization has been done in the farming community and the scientific community in order to increase the harvest in the North Texas area despite the climate. He first explained a little about the local history of wheat:

> Denton used to have one of the largest research stations in the country on wheat. So, I was getting the old varieties of wheat that Denton released. It was called Station Number

> Six. And I found out, a baker wanted me to grow these old wheats. I have a combine, so I can harvest it.

Mark told me that he had warned the baker that these older varieties are not as hardy, but that he would try. His story concluded with what he had expected: “And so, I was growing those old wheats and then we had that cold snap this winter with the five degrees… I found out why the farmers don't grow that wheat anymore - because it's all dead.” The rapid onset of cold weather is a common event in a North Texas winter; growing is not difficult due to a prolonged cold climate, but a climate that fluctuates rapidly.

Another problem in the area is the extreme weather and climate events that are becoming more consistent. As Michael Ashford listed:

> So we've had the wettest spring on record. We've had the driest summer on record. We've had the warmest winter on record. We had a tornado. Uh, so that's made it hard to plan.

Despite these barriers, Michael continues to plant vegetable gardens with a variety of produce and take advantage of whatever crops he has growing that continue despite adverse conditions.

James Hunter at Paul Quinn College said that a part of what he is trying to do as farm manager is to keep track of which crops did better in more adverse times to know what array of vegetables he should plant in the coming seasons. Even Mark Hutchins, who raises animals, closely watches how his grasses interact with the climate to know how he should manage his farm differently to better regenerate the pastureland. Daily experimentation and a need for detailed observation of nature is a critical skill to successfully grow in a climate like the one found in North Texas, and this skill is built through working closely with the environment.

5.2.2.2 Threats in the Native Biome

Managing a farm through the crops planted or animal rotation is not the only interaction a farmer has with the environment. For some farmers, the presence of native animals or insects

which may be a detriment to their farm is their greatest concern in management. While Day Dream Farm's concern over snakes and Nature's Circle's weariness of kissing bugs were due to fears of the dangers that those biota present to the health of the farmers' families, Aunt Sue's Barn was concerned over armadillos because of the damage that they can do to the land.

The dire concerns of snakes and kissing bugs, which could cause fatal harm to humans, are not the only dangerous animal concerns. Hawks, coyotes, raccoons, mountain lions, buzzards, and feral hogs were all given as examples of predatory concerns, especially in terms of danger to livestock. Additional land limitations related to livestock can be found in any bio contaminant or other parasitic organisms which may be present in the land, as worms and other internal parasites are more likely to develop into problems in conditions of more sparse or wet growth. There are some organisms which can live in the soil in that manner for 20 years or more and infect any new animals that come into contact with them.

Other land limitations are the type of soil or quality of the soil found on the property. While there are pockets of Denton and other cities in North Texas that have sandy soil, most of the soil in the area is thick, black clay. While this clay can hold more minerals and nutrients than other soil types, being able to break up the clay enough for it to grow is a challenge. There are also many farms which have been farmed in industrial methods for so long that their topsoil has been depleted and it must be built back up to grow plants using the natural or permaculture methods preferred by the local food farmers in North Texas.

Other challenges found in North Texas land are the noxious flowers that develop in the fall, the water scarcity in the area, and the loss of native grasses brought on by development and large-scale agriculture. The native flowers in north Texas are beautiful, but the ones in the fall ruin the flavor of honey. This is such a concern that area beekeeper organizations will discuss

flowers like Snow on the Prairie in the fall and watch for the first bloom, making it an effort within the group to extract all honey they may want to keep or sell beforehand. Native grasses are hardier, grow deeper roots (preserving the topsoil), and offer more nutrients to livestock than grasses like Bermuda. Due to the harsh climate and population growth, the water scarcity found in the area is magnified by the loss of native grasses.

While land and animal limitations are somewhat inconsistent, they are more predictable and easier to plan for than weather events and climate disasters. Looking back to the challenge of resellers, it is interesting to observe the connection between these challenges. At any point, the challenges of the land could lead to a loss in crop yield or animal health which may compromise a farmer's success. When success is compromised, farmers may be more inclined to participate in the practice of reselling. James Hunter estimated the process of making the compromise:

> It's really hard and that's just the bottom line. You know, there's a lot of farmers that supplement…It's hard, you know, I get it. And once you get sucked into like this, it's almost like an ethical thing, you know.
>
> All right, so the choice is feeding my family or not making sales at markets. So, my tomato crop fails. Squash bugs came in and ate all my squash. I know that no one's going to have that much squash at the market. All of mine is gone, but I can go downtown, pick-up a pallet of squash and sell it and make $300 profit. I'm just gonna do it this week. You know?
>
> Or I'm just going to do it at my farm stand at my farm, just because I got regulars that come by every week to buy. Um, and then it's, well we did last year with the squash, let's do it with the tomatoes, let's do it with the green beans…I ran out of onions and it's only June, let's, let's buy a couple of extra pallets and keep the onions going the rest of the year.
>
> And then it's, it's mixing, you know? Yeah. They've got 20 acres of veggies that they're growing out, but they're also bringing in pallets of produce and pealing stickers all morning. I mean...

The variability of the farmer's success in growing crops may influence their decisions around reselling.

A farmer's total value system and their motivations to farm are the most important factors in knowing if they may be likely to participate in reselling, however there are many circumstances that may cause a farmer to make a choice to resell through prioritizing family welfare or other factors above the transparency they are striving the ensure. An interesting note is the approaches farmers use to overcome the challenge of life on the farm also align with their value systems – making the best choices that they have found (plant diversity, crop rotation, working with nature) naturally fall within the goals that they have to farm (environmental, independence). To better meet the challenges of the land, farmers in North Texas engage in a process of education and experience which leads to the generation of the climate adaptive ecological knowledge described in section 2.2.2 Ecological Anthropology: TEK and CAEK and detailed in section 4.3 Farming Methods.

5.2.2.3 Life Challenges beyond the Farm

There are many ways that North Texas local food farmers show that they are using their capabilities to find solutions to the entire world of barriers to the local food and farming network, however there is still a certain burnout that can occur from the daily challenges of farming. The toll of these daily challenges to farming can fatigue any farmer who is not paying attention to their own welfare. When Amanda Austin explained to me why she got out of farming, she said that those daily challenges all culminated in the birth of her oldest child at the same time a flood decimated her entire farm. It was too much, as Amanda said:

> Even though my practices were sustainable for the environment, they were not sustainable to me. Like I was exhausted. I was beat down, worn out. I had given so much of myself for so many years.

The daily grind was the biggest challenge for several of the farmers, because this was the area where the duties of keeping families and spouses happy while keeping up with all their other tasks

took their largest toll.

While the Challenge of the Life on the Farm is largely addressed through farming methods, and the Challenge of Resellers is being addressed through the consumer education and the creation of producer-only markets, the Challenge of the Market presents a whole different group of barriers to consider.

5.2.3 The Challenge of the Market

The Challenge of the Market presents barriers relating to the farm as a business. The type of market that each local food farmer may sell into is varied, however in any market there exists challenges of competition and consumer loyalty. There were not many competitive challenges mentioned by local food farmers, besides the challenges of resellers which are different than competition. The main difference found in competition was in the difference between full-time and part-time farmers. Another challenge is found in regulation and certification, as many of the farms have to change to follow new regulations in food handling as well as attain and retain certifications in raising, growing, and selling food. There was also some mention of customer challenges by a few of the local food farmers, but these were minimal. A need to educate the consumer, however, was seen throughout the interviews.

In order to compete in any market, there is a need for knowledge of the practices needed to sell. Amanda Austin suggested social media training as one of the first steps a farmer can take to better market their farm. Amanda Vanhoozier’s recommendations for maintaining success are tracking and following sales trends, asking customers what they want to see, and finding ways to build relationships that support and grow the local food and farm community.

5.2.3.1 Finding Markets

There are many different types of markets that farmers selling local food pursue. Although this list is not exhaustive, I did attempt to account for every market that the local farmers I interviewed mentioned:

- Farmers' Markets – markets selling food grown within 150 miles
  - Producer-Only Markets – farmers' markets with only verified farmer's selling produce
  - Craft and Farmer Markets – farmers' markets with both craft and produce booths
  - Unregulated Farmers' Markets – farmers' markets with unverified sellers
- Chefs / Restaurants – mostly restaurants advertising farm-to-table cuisine
- Local Grocers – independent farm relationships with local grocers
- You Picks / Pick Your Owns / Agritourism – developed by the farm to draw customers to the farm
- Education Sites – farms built with the purpose of teaching or showing their methods to others
- Niche Markets – farms producing a product aimed to fill a market that is not supported in the area
- Consumer Direct – sales from the farm to consumers directly on the farm or through online ordering
  - Produce and value-added goods
  - Animal sales
- Other Farmers – sales of goods or animals that other farmers use or raise on their farm
  - Breeders – usually selling weaned animals to farmers for use in raising for meat or in dairying
  - Hay sales – to feed livestock
- Pollination Services – bees are hired out to other states in need of more pollinators at key times in crop development

- Swarm Removal Services – swarms of bees are removed from areas that they are not wanted and given a hive by the beekeeper, they are then maintained as the beekeeper's
- Agricultural Tax Exemptions –landowners living on large expanses of land who want to qualify for a tax exemption and lower their property taxes
    - Bees – two years ago bees were added to the list of qualifying tax exemptions, the number of hives required depends on the amount of land
    - Hay – landowners will keep their house and yard for themselves and make an agreement with a hay farmer to use the rest to grow and harvest hay
    - Cattle – small homesteaders begin with one to two cows on their land to quickly reach the tax exemption minimum stocking requirement

The types of the markets that local farmers sold their product into influenced their business structure but did not necessarily dictate their methods. Determining a farm's target market is important; many times the types of markets farmers engage with are varied and overlapping.

5.2.3.2 Full-Time Versus Part-Time Farming

Although any farmer can benefit from knowledge of selling practices, there is still inherently the difference that the factors of time and money present to a farm's ability to sustain itself. When I asked the difference between the full-time and part-time farming, each farmer consistently gave the same response. Part-time farmers have frustrations about the constant need for more time to maintain the farm and to build infrastructure however they have the advantage of off-farm income. Whereas full-time farmers' concerns rested on the cost-to-profit ratio of infrastructure and maintenance because they did not have any other source of income to rely upon. However, as full-time farmers they could plan and maintain the farm's infrastructure and maintenance more easily. Success in farming is tempered by the amount of time a farmer can put into farm labor and the cost of supporting the farm.

How these differences in farming concerns translate to competitive challenges is the ability to offer goods at a cost sometimes even lower than the expense of growing them. As a few farmers noted, farmers' markets have a lot of control over how these competitive differences may play out for farmers. The decision of which farmers' markets to sell into is complex. Mark from Rehoboth Ranch explained:

> If you're charging a premium quality price then farmers' markets can make sense. You just load up some trailers and freezers and go and it's good. But, there are a lot of markets where we're not interested in going to the market because we know there's a producer there already who, God bless them, I'm happy they're doing this, but … I mean they've got a six-figure salary to fall back on if this doesn't work out…

As Mark implied, without the market that he sells at paying attention to each of their vendors' competitive pricing, he would not be able to maintain his prices at a level to make the profit needed for Rehoboth Ranch to continue to run. It is important in a capitalist economy to maintain a profit, and creating incentives to purchase through offering specials is an excellent avenue to gain consumers, however artificial prices that are continually dropped below the true cost of growing or making a product are effectually a race to the bottom.

5.2.3.3 Regulation and Certification

Regulation and certifications enter farming from many different areas. These numerous regulations and certifications can stifle a farm's ability to grow and make a profit. The efforts in the local Texas farming communities to limit the amount a farm can legally be charged for permit fees to sell at an area market was recently limited under SB932 to cap the costs at $100 per year, per jurisdiction. This effort shows that local food farmers in Texas are working together to begin to change policy to better support local farming.

From the start, regulations are needed for a business to be considered a farm. To qualify for an agricultural tax exemption, agents from the local agricultural extension office will visit the

farm; these are usually county level inspections. In addition, if a farm is processing meat on-site there are more regulatory standards from the government that they must follow, as well as those farms that sell eggs or dairy.

Certification in farming can be quite expensive but are a way to further a farmer's ability and increase their skillset as a farmer. Many farmers pursue programs like the Texas Master Gardeners or Permaculture Design Programs offered through cities in order to enter farming. These programs benefit the farmer through providing both education and access to a network. Other farmers pursue certification in more specialized areas of farming, such as master composter or Texas irrigation certification. The more specialized certifications help a farmer to be able to sell their abilities in other ways, furthering the sustainability of their farm through increasing their skillsets.

Regulations are somewhat double-edged limitations to local food farming. Although regulations did serve to create more initial barriers to entry, they also sometimes protected the sanctity of the farmer-consumer relationship through things like a Texas natural grower certification and producer-only farmers' markets. The farmers I interviewed also seemed to understand that regulations may pose a barrier, but they could also serve to protect their own rights within policy making.

The biggest critique that I heard to policy and regulations was that the people who make the rules do not really understand the rules that they are making. As Mark Chapin remembered:

> I went to a meeting in Houston on soil and stuff. On the new rules and it was for producers and everything and there was only five of us that were growers. Everybody else was scientists. And, you talked to these people and they don't know squat about diddly deal. And they're the ones making the rules.

Mark explained to me that he had a few experiences through his history farming where learning about regulations became important, due to his interest in organic and natural methods and

different ways to farm without chemicals.

Mark related one of his experiences dealing in regulation and trying to help change policy. He said that he had previously been using a chemical that was supposed to be organic, but it was not considered organic by him any longer. His reasoning to believe the chemical is inorganic was scientific and reliable. Mark had been reviewing how the chemical is supposed to break down from what he had read in the research and he realized that the entire process used to describe the break down was not the description of a chemical break down, but the process of a chemical *leaching out* into the environment.

Mark tried after that point to contact the school where the research was done and the researcher who had written the paper. He found that he was professionally outside of that researchers' field and this created a barrier to his own ability to contradict the research. There was really nothing he could do or say to change the findings. Although he spoke with the original researcher, who had since retired, and they validated his reasoning, they did not have a way to change the research.

Another problem with regulations comes from the population growth that has been seen in the area. As the population grows in North Texas, more urban residents are coming to live in rural areas, and the differences between the two ways of life may sometimes lead to conflicts over farming methods. Three of the farmers had experiences with city officials being called in to determine whose rights were more important in questions of farming methods infringing domestic comfort – namely, due to flies and manure. Some new residents call in officials to protect their rights due to the presence of flies or manure on their neighbor's farm. Interestingly, there is legal precedent to support the farmer in this case, because a farmer should not suddenly be restricted from using their farming methods if someone new moves into the area. However,

the more the population grows, the more a farmer's power to continue their methods has been challenged.

Regulations also carry with them the cost of certification. For instance, to sell duck eggs, I must certify that my birds came from a business selling ducks and not from the wild, as there are laws protecting migratory birds in North America. Andrea Gorham informed me that in some places, like North Carolina, there are laws protecting the farmers from the total amount they can be charged to attain all the certifications that they may need. The recent passing of SB932 is another example of a protective regulation against egregious certification. James Sullivan added the point that in other places, the regulations can be so numerous and expensive that he would not be able to farm there.

At Paul Quinn College, James Hunter has quite a few different regulations that he has to consider, but his successful navigation of these regulations may serve as a guide for other farmers. To sell their produce to WIC customers, the We Over Me Farm has partnered with a local non-profit that works to increase access to nutritious foods. The non-profit sets up the business relationship between themselves and WIC, and the produce from the We Over Me Farm is sold to the recipients of the WIC voucher.

Equally as important as their relationship with the area non-profit that works to increase access is the relationship that James Hunter has worked to create with both the cafeteria supplier and a composting company working with the college. The cafeterias at universities and many public schools are oftentimes in contracts with their suppliers where they are unable to bring in outside food, even from their own gardens. James Hunter helped to renegotiate the contract with the cafeteria supplier for Paul Quinn College when they were in the market for a new contract, and he helped to design a way of tracking sales that worked for the supplier and the farm in order

to use the farm's local produce to serve the students and help close the system and keep more money in the local community. There was also a compost company that James found that was willing to work with the college, however their biggest concern was knowing how to educate students and faculty in the correct items to compost.

Lobbying for changes in regulations was the biggest way that I saw local food farmers and their supporters making change in their outside community. The more farmers that I spoke with about regulations, the more I realized that many of the local food farmers have realized their strength in affecting policy and have begun to organize into different organizations to use their collective power to change laws. Several farmers also sit on boards, attend city meetings, or partner with other organizations in order to change policies that inhibit their abilities to farm.

5.3 Overcoming Challenges

Despite the many challenges that I discussed with local food farmers, they still had confidence in their ability to overcome the barriers that they met to succeed in their business. To overcome the challenges of farming, farmers would relate different ways of seeking education and sharing knowledge with others. They would also express different forms of firsthand experience which has served to help them overcome reoccurring obstacles. Another path to overcoming obstacles can be found in evaluating investment and economic opportunities on the farm.

5.3.1 Breaking Barriers through Farm Education

Educational pathways are numerous in the world of farming today, however there are many educational tools commonly used. Education also consists of teaching others in order to create a community of local food supporters. Most of the local food farmers that I interviewed

said that they would educate themselves on farming methods at least one day per week and would teach others the value of local food at almost every interaction.

The most popular tool to use to learn farming methods when they are immediately needed was YouTube. However, online searches and Google were also mentioned often. Other farmers, like Deb from Nature's Circle, use social media. As Deb noted, "I do a lot of research online or on social media…That has really been an excellent resource." The internet is a valuable tool for farmers to learn farming methods and ask questions to like-minded individuals who may have common problems.

Although some types of media were used the most frequently to find quick directions to farming methods, forms of certification were the most frequent educational pathway to holistically become an authority in a chosen farming method. There are numerous certifications through the state of Texas that a farmer could attain, such as master gardener, permaculture design, master beekeeper, master composter, or Texas irrigator. Many of the farmers told me that getting the certification was not only about acquiring the knowledge, but also about building a network of like-minded growers to help support their farming endeavors. Memberships in groups like Texas Organic Farmers and Gardeners Association (TOFGA), Holistic Management International, Demeter USA, ATTRA – Sustainable Agriculture Program, and the Farm and Ranch Freedom Alliance (FARFA) are other avenues farmers use to advance their knowledge, with or without additional certifications. The networks that farmers build can serve as their future pathway to education, through the exchange of information with both the network of growers and the educators.

There were also many farmers who mentioned reading books and listening to audio books and podcasts to continually learn new methods. The advantage to audio books or podcasts

is that many of the farmers would be listening to these forms of education while actively farming. This type of continued education was seen by some farmers as a break from their daily work or, when listening to books or podcasts, a way to make the most of the time spent doing monotonous work.

Several farmers also mentioned visiting farms, visiting conferences, or working at an internship as the way they were able to attain the knowledge that they needed to farm. These forms of education also serve to amplify a farmer's network through the connections that are made. Some of them, like Jeff Bednar from Profound Microfarms, have gone from attending conferences to speaking at them, both becoming the teacher and exponentially growing their network through the number of other farmers they reach.

As Jeff Bednar went from the student to the teacher in his conference attendance, so too do many farmers transition from learning to teaching. Most of the farmers who host You-Picks mentioned the way the farm visit serves as an educational tool, especially for children. As Ken Halverson at Larken Orchards put it, "most kids don't have a clue that fruit actually grows on a tree that grows in the ground. You know, there's a lot of things when they come out here [that] they get to see that they don't get to see in the city." Families are not the only groups visiting the farms, many farmers mentioned Boy Scout or Girl Scout groups, senior groups, or other farmers.

Some found their role teaching to be supporting the farming community in different ways. Both Loretta Messinger at DFW Aquaponics and Jeff Bednar at Profound Microfarms mentioned using their role as educators to help produce more farmers, while Deb at Nature's Circle said that she would like to host interns. Bill from William Hartley Apiaries preferred to mentor on a one-to-one basis, and Mark Chapin at Chapin Farms gives lectures on native grasses

and flowers to classes at an area college. These farmers grow more farmers through their teaching roles.

James Hunter at Paul Quinn College has the most elaborate teaching role in his position as Farm Director. James told me that he teaches farming methods to 15 to 20 students per semester, as well as contributes to hosting around 7,000 people on farm tours annually. Although James admittedly has his hands full with all the turnover of unskilled farm employees that he educates, his vision is to continually add classes for a holistic teaching approach, such as classes on healthy eating at the farm. Although many of the students that he works with may not go on to farm, they learn valuable skills about running a business and planning a few seasons in advance, which are valuable in any career.

A few farmers mentioned the way that teaching others helps to grow their own community. Some would save academic articles that they had read for later use in teaching their customers the value of their products. Others, like Jay at Day Dream Farms, were excited about the way teaching others impacts their own farm's livelihood. As he told me:

> We had a friend contact her [Prisca] and ask her for eggs to do an experience in school. We gave them about sixteen eggs, they came back about a month later with about twelve little chicks… They gave the chicks about three weeks and then we took the chicks back to grow them. And then, we've got those chicks right now. And when I opened my door, my son was carrying off like, twelve eggs. Among those are eggs that come from what those kids hatched for us.

By Jay and Prisca sharing their eggs to help in a learning experience, everyone was able to benefit.

The educational aspect of farming is monumental and instrumental to a farmer's success. Every single farmer I interviewed continually learns and researches farming methods in order to create a more efficient and plentiful farm. Luke and Mallory, a few of the local food and farm supporters, told me during our interview that when people learn the reality behind food

production and processing, what they eat becomes more meaningful to them. Through also teaching their community of support, farmers can show the value in the foods that they produce.

5.3.2 Overcoming Obstacles through Experience

Education is integral to a farmer's success, but so, too, is experience. Personally, I read books on farming methods constantly and ask many farmers their advice about methods, but I still do not truly understand until I practice the methods first-hand. Many farmers spoke of experiences and education as intertwined.

Interacting with and observing nature was described as a great learning experience by some. James Hunter's description of learning from nature captures how education and experience intermix:

> So, I was cutting into like a four-foot berm [with a bobcat]. And I just looked, and the dandelion was sitting on top and then I just saw the entire root structure straight down all the way down into this is this kind of sandy berm type thing…And then you read about it and you think about grasses and you see - like native grasses and how they grow like 40 feet in a year and all this crazy stuff. And then you look at root structures and how deep they can go. And how, you know, if you do a cover crop or radishes and how it might drop down, but then like in your head, I don't know, like seeing it in front of me, I'm like that's what a soil sub-structure looks like. That's what a root truly looks like. I don't know. To me that just blew my mind that day and I'm like, 'huh…dandelions are pretty cool.'

Although James had read about root substructures and the value of cover crops to rejuvenate soil health, it was not until he saw the four-foot taproot that these descriptions resonated with him.

Iteration, or the process of repeating a procedure to become closer and closer to a solution to a problem, is used to refer to math or computer problems usually. However, iteration is exactly the process Andrea Gorham at Tree Folk Farms described; "when you plant something and it works there's – for the first time, you learn about that, whatever it is, and then there's a million different steps you can take to make it easier. So, just over time you get better at everything." The same type of iteration was described in greenhouse climate maintenance,

growing tropical and seasonal plants, making goat milk dog treats, tree spacing, farm equipment usage, market prices, grant writing, managing a farm, pasture grazing management, stocking density, and in bee swarm removal. Although the saying “practice makes perfect” may come to mind in speaking about this iteration, the focused and methodical process behind much of the experiences goes beyond simple ‘practice.’

The experience of growing up on a farm was the process of education for several of the farmers. This experience can be as valuable as a formal education, as retired dairy farmer Arthur Downe told me, “you can’t just say ‘I want to be a dairy farmer’ and think you can go and get a loan, because they won’t give it to you. Unless you’ve got some knowledge of – you know – farming or dairying or something.” Many of the farmers who grew up on farms had to warm-up to answering questions about their farming methods, because those methods were developed in a way that their formation was not a pointed learning experience that adults new to farming engage in, but a point of enculturation, and the actions of farming are now habitual.

The experience of farming is a form of education itself. It also creates a more prosperous farm through the process of iteration. While experience and education are valuable to growing crops and raising animals, these types of approaches to overcome The Challenge of Life on The Farm are not the only considerations to making advances on the farm.

5.3.3 Investments and Economics

There were many ways that farmers could make changes to the daily grind in order to alleviate some of their day-to-day activities. Investments into infrastructure and maintenance are constant considerations on the farm. The initial investment in farmland is planned out through a payment plan, and additional large infrastructure, such as the purchase of a tractor or paying to have fencing built, are many times planned extensively.

There is sometimes a lack of knowing on some farmers' part of the true expense of growing a product. Many farmers spoke of other farmers they had known who had to leave farming due to not looking at the true economics of their farm, and accounting for outside expenses in their pricing of their goods or produce. James Sullivan's explanation of economic investments in the Farming Methods section shows how the expenses of raising chickens can be calculated to determine when to purchase and sell the chicken in its lifetime for an estimable profit at the farmer's greatest ease.

Some other farmers spoke about the higher cost that they would have to pay in order to preserve the integrity of their relationships or the purity or diet of their herd. Some farmers would only buy animals from trusted breeders or would purchase specific types of feed for their animals. The quality of an animal's life and genetics does impact their flavor, whether of their milk and eggs or of their meat, so this added cost is an investment to increase the value of the farmer's product.

Farming today has a high cost of entry to those who are entering as full-time farmers. James Hunter at Paul Quinn College was looking into moving to begin his own farm someday soon, as he described:

> It is now an industry that has a high cost of entry, in my opinion. And you're either entering it later in life when you had the ability to build up the capital, you're savvy enough to raise the capital, or you have family-land that you're able to utilize for that. I think - I used to say it was like a half-million to start a 20-acre operation in North Texas at all, you know, it's highly variable. I know people who, you know, they say they put close to a million in 15 acres.

James then named off many more variables and considerations to finding farmland and the financial pitfalls that may come from missing infrastructure.

The cost of entry and infrastructure are not the only investments to consider. Ken Halverson at Larken Farms Orchard invests in 500 to 1,000 trees per year to add to his orchard.

Although large yearly investments may not resonate with most farmers, Mark Hutchins at Rehoboth Ranch described the relationship that his investments preserve with the farmers who breed animals for him:

> So, we're guaranteeing that farmer that if they will get at least the average of what they would get if they took that [animal] to a commodity market plus 5%. Because that's what is necessary in order for us - for this sustainable, regenerative system to work we're going to have to be able to allow more specialization.

By preserving his relationship with these animal breeders, Mark ensures the quality of his own product.

Off-farm economics were also instrumental to the survival of many farms. Only three of the farms involved relied solely on farm income to support the farm. Eight of the other farms are working toward relying solely on farm income, but first need to develop the infrastructure, methods, and markets to ensure success. If farmers did not solely support the farm as full-time farmers, then the farmer, their spouse, or some other family member works off the farm to help ensure the farm's success. Many farmers spoke of growing their sales to specific markets in order to establish their move to full-time.

5.4 The Changing World of Local Food and Farming

The local food farmer in North Texas must be focused on the future while learning from the present and remembering and recording the past. Education, experience, economics, and the creation of communities all contribute on the pathway to success. Once farmers begin to become established and to reach goals, their process to maintain and reinforce their success changes to a more iterative process. Consistency, successful management, streamlining processes, efficiency, and creating methods that could be maintained by anyone on the farm were all listed as important practices to maintain success.

The important difference to this success is the addition of a community of support that local food farmers have found value in pursuing. Finding methods to successfully grow food is nothing without the consumers to buy that food. The methods that the local food farmers in North Texas use themselves add value to their product. These farmers have realized that through focusing on the values of their methods and in turn educating consumers of the complex and multi-layered values inherent in participating in the local food system, they can build to their community organically through the consumer's want for those same values.

The farmers involved in this research were from all walks of life. Many lessons and revelations about the reality of local farming and the substance of the local food system can be found in the analysis of these farmers' methods, their beliefs, and their experiences. Through following the question of success and answering how success is viewed within the local food and farm system, I was able to find the presence of alternative value choices and a network that is built around a different form of relationship than purely transactional.

5.4.1 The Image of a Farmer

The idea of a singular image of a 21st century farmer is an impossibility, as can be seen in the unique characters and motivations of the sample of North Texas farmers that I was able to learn from. There were a few interesting characteristics about local food farmers that I learned that drastically changed my understanding of who they are. The values that are found in participating in the local farming community and the values being created in local farmers using the methods described in section 4.3 become fuel to further motivate both the farmer and the community that support them to continually support local food.

An important observation was that the community support that a few of the farmers were creating was altruistic, but there was a form of compensation in the feeling the consumer's

appreciation generated in the farmer. The appreciation from the community of support sometimes served to give the farmer hope. As Jay at Day Dream Farms explained:

> They're like, 'Man, you did it. You're making it.' Because it's not only me, it's all of us – 'you're making it.' You know what I'm saying? And then – sometimes with my ego, I think, yea. And then you look back at what you have. You know, even though you always do that. Maybe sometimes you get lost with being busy or when we had that [problem] with building the greenhouse or the things for the goat and there, sometimes, you wake up, you can't stand up. Your back starts hurting you and, you know, you have to call for help. But then, you know, when you hear people say things like that…

It is hard to call the type of support Day Dream Farms provides the community something selfish, especially when you consider the labor put into farming and the physical toll that it takes. Rather, the social appreciation can be seen more as a form of additional payment that some farmers receive, and for some of them that payment is as important as monetary compensation.

Another intriguing perspective that I found quite a few farmers have is an "abundance mindset." When asked about local food and farmer competition in the area, these farmers pointed out that the Dallas / Fort Worth area is years away from market saturation. It is impossible to ignore the large population of consumers in the area, many of which are interested in exploring different foods. Jeff Bednar's explanation of this view best represents the way it transforms a local food farmers' interpretation of success:

> I went to a farm meeting…it was me and like, nine farmers and everyone walked around the table was talking about how hard it is to farm, how you don't make any money when you farm, how women farmers are disadvantaged, how like – it's just nonstop depressing, complaining like there's no chance. And I'm sitting here with an abundance mindset. I can barely listen to what these guys are saying, like I'm going to show people that you actually can create a sustainable living for your family and you can have a lot of fun and people will come play with you and like help you and all of the resources that are like that.
>
> Like, I want to change the conversation around agriculture and - Yeah, there's ways of doing that and people - when you're in the shutoff, [thinking] like you can't make any money doing this, that [is when] you're going to end up taking bad deals because that's what you believe you have to do. And, so I think by showing people you can have a

different mindset of that, we'll have them aspire to have different mindsets and that's how we, you know, that's how we win this game.

Not all the farmers with the abundance mindset were as optimistic as Jeff. Logically evaluating the population of the area in relation to the number of local food farmers shows that at this point, any farmer who can grow or raise food and can do it well should be able to find a market.

5.4.2 Support of Local Food

Support of local food farmers in the area is seen by many of the farmers as a new trend and by some as a local food movement. Wanda Chapin phrased the trend best, when she said that she had seen consumers in other areas who were “willing to pay more for their food to get healthier food. But it’s starting to pick up around here.” The trend in support of local food is growing and the local food farmers seem to understand how to talk about local food in a way that they can portray its value to local consumers.

The behavior of many shoppers in America supports large grocers, as many farmers mentioned, due to the ease of a grocer as a one-stop shop and industrial food’s advantage of offering produce at a lower price, and according to preference over seasonality. These large grocers are what many people have grown-up knowing as their source of food. The unfortunate truth of this preference is that it reinforces the power of industrial food corporations to continue industrial agriculture. Local food and farm supporters Amanda Austin and Amanda Vanhoozier both pointed to educating consumers and building relationships as the only way to garner enough support to offer local food as a lasting alternative solution.

5.4.2.1 Barriers beyond Farming

Although the local food system is growing, there are still many setbacks. Some other

local food and farm supporters mentioned the time constraints and infrastructure of farmers' markets themselves as barriers to shopping at markets over large grocers. A few farmers mentioned the lack of farmers' markets that run more days during the week or the need to journey a long way to sell at markets as a constraint. And besides farmers' markets, several other farmers mentioned local small grocers that have recently closed shop presenting further barriers to their farm's success through the loss of a steady customer. The common problem of a lack of a storefront offering convenience in access to local food was seen throughout the local food and farming network.

Limited produce availability during certain times of the year and lack of variety in the booths was seen by some food and farm supporters as their greatest barrier to shopping at the farmers' markets. Others mentioned the food at the market as more expensive, but this was seldom seen as a barrier to making purchases. A few of the supporters also said that they would like markets to be open daily so that they could access local food whenever they need it, making the need for a storefront more apparent.

The barriers of inconvenience in markets and limited access along with a consumers' preference or need for lower price and desire for instant gratification combine to create multiple layers of barriers beyond a farmer's control. The final way that the world of local food and farming is changing is through a different form of relationship being pursued by the local food farmer and consumer.

5.4.2.2 Building Communities for the Future

No matter the type of farming engaged in or the type of market sold into, success for a local food farmer is partially seen in the strength of their community. This strength is important

to preserving farm success. Although communities form in many ways, views of community health are important to understanding how to build and strengthen communities of support.

One of the biggest influences on the size of a farmer's community today is the internet. Although there are many ways that internet education tools have made farmers more independent, social media tools have served to bring them back together. For some farmers, as Bill Hartley explained, the internet is a game changer:

> in 1988, we had the atresia mite come through and I had 20 hives then and when it was over, within two weeks, I had one. And between North Texas and Oklahoma we had lost 98% of all the bees we knew of in existence in 1988…We didn't find out for a couple of years what had happened; and it was a culprit called the atresia mite. And that was mostly because we didn't have the internet and stuff to keep us informed. I think the internet has been one of the biggest boosts to beekeeping that has ever been. Mostly because you can do instant research. You could find out what's going on in other beekeeper's worlds. I mean, I'm in contact with a number of different clubs all the time and people all over the state.

The communities around farming that I have interacted with on the internet, personally, have been invaluable to helping my own farm to succeed.

In addition to the growth of virtual communities forming of local food farmers from different regions, local food and farmer relationships are also growing through the formation of special interest groups. Loretta Messinger said the group of people who formed the original DFW Aquaponics had "caught the bug and really just wanted to learn from a professional how to do it from the ground up." James Hunter at Paul Quinn College told me that there is a group of new farmers meeting for monthly lunches now; amplifying their relationships through extended interaction beyond the farmers' market. As local food and farmer relationships grow, the network of farmers and local food and farm supporters is becoming aware of their strength in numbers and are creating more opportunities to establish relationships.

There are also ways that farms support the communities around them. The We Over Me Farm at Paul Quinn College has created an exemplary model of community support. As James Hunter described:

> We donate ten to 15% of our produce that we grow to neighborhood food pantries. We sell a lot of the produce at cost at our farm stand here to community members. We enjoy selling to Lonestar customers, to WIC customers. We market that heavily. It's kind of part of our dual commitment to the students and community and being an educational project.

The program the farm participates in for WIC recipients provides a $30 voucher per family member for taking classes in healthy eating and nutrition. James also noted that the farm and college has supported the community through supporting and lobbying for an area grocery store to increase access in the community.

Day Dream Farms also strives to help support their communities. As Prisca related, “we offer the community – our close community here, all sorts of vegetables. Our business, besides our vegetables, its main goal is really to offer those tropical vegetables to, you know, many African people. Because they already know it and, why not provide this, you know, to others as well.” Jay continued, “then our main goal is to be able to produce a lot and then to get down the price to them.” Not only do Prisca and Jay help to support and build communities as their farm grows through offering their produce, they have also established relationships with area schools to provide education and experience to school children.

Many of the farmers realize the value of building the communities around them. As Rehoboth Ranch’s Mark Hutchins explained:

> it is very important to healthy communities to have a loyalty to the people and the land around them. Not unswerving, you know, it's certainly appropriate to do what you need to do to support your family. But if communities are looking after each other and being very tight knit around themselves as a community, I believe there's a lot of benefit to that and in building and maintaining a strong social fabric. And I think you lose a lot of that social fabric when you have a mass exodus to these big urban and suburban areas.

Throughout our interview, Mark spoke about the health of his local community and the importance of building and preserving relationships there.

The initial pursuit of relationships within the farming community or with local food farm supporters are instrumental in establishing a farm's success. Jeff Bednar at Profound Microfarms' process of pursuing relationships has been particularly useful in growing support. As Jeff explained, "I always look for: how do I help someone before I ask for help." By helping others first, Jeff creates a bond of confidence between himself and his support.

The need to build a community of support discussed earlier in Establishing a Community of Support has been determined to be a crucial part of maintaining local food movements. The actions of the farmers in North Texas local food farming reinforces this focus on community building. Establishing a community of support around the local food and farming system in North Texas is currently the main focus of almost every local food farmer that I have spoken with – both formally during this research, and as a local food activist and farmer, attending conferences and other symposiums held to discuss local food in North Texas and beyond.

CHAPTER 6

DISCUSSION AND GOING FORWARD

6.1 North Texas Local Food Farming and American Industrial Agriculture

The North Texas Local Food Farmers in this research have differing views of their role as a local food farmer in comparison to the United States industrial food system. While many farmers stated that they are working to build and offer an alternative food system, some felt that their role is more instrumental in dismantling the central food system. While this could be interpreted as a form of competition, those farmers still do not consider themselves to be in direct competition with the U.S. national food system, rather, they see industrial food as offering a different product that contains different values.

The local food farmers vertically integrate their farms to produce goods. Many farmers use all of Goody's (1982, 72) innovations in food production and processing to create products that carry their farm's brand. These local food farmers do not use the industrial farming methods that Montgomery (2007, 5), Albritton (2010, 343), Murray, et al. (2012, 81), Schlosser (2013, 426), Anderson (2005, 113-114), and Wallach (2013, 197) warn against in 2.1.5 Consequences of Industrial Food. Instead, they engage in the 'second wave' of agriculture that Schnell (2007, 551) described as focused on local food economies. Their methods follow many of the suggestions found in Anderson's (2005, 268) revolutionary farming methods, which focus on the use of multiple crops, composting, and low tillage, among other more traditional farming methods.

The North Texas local food farmers were too varied in their approaches and values to create a definitive name for their methods in relation to their political agenda as farmers. The Neo-peasantry mentioned by Brangth and Haugen (2010, 37) and Willis and Campbell (2004,

317) or Furmen, et al.'s (2014, 69) Civic Agriculturalists, discussed in 2.1.6 Back to the Land: The Draw of the Local Farm-and-Food System, show a different form of organization than these North Texas farmers. Yet these farmers' level of knowledge and awareness of their role as local farmers as well as their awareness of the implications of their successes show that they are well organized to create a local food community for different reasons. The knowledge and awareness of these Agricultural Masterminds of local farming leads to an understanding of the approach needed to take back the meaning of food in order to build the local food and farming community.

6.2 Taking Back the Meaning of Food

The local food farmers in North Texas understand the need to share their knowledge with their consumer base as one of the main approaches to take back the meaning of food. The relationships being built in the local food system are intentionally value-based. Most of the local farmers knew the values that their food represented. They present these values to consumers based on the farmer's belief of what the consumer was interested in finding. A few of the farmers almost laughed as they ran through all the valuable aspects of the food that they sell, and some of them would tick off each selling point on their fingers, as if they would forget one if they did not keep count.

Local food is commodified into an experience through local farmers and supporters educating and marketing local food with all the values that it represents. When a consumer purchases local food, they are not only purchasing food to eat, they are now made aware of the benefits to the environment, their own health, and the community they are strengthening through their purchase. The altruism found in the farmer is transferred to the supporter through their purchase.

The commodification of outside values into local food helps to reestablish some of the links between food and farming that were lost through the industrialization of food, discussed previously in 2.1.5 Consequences of Industrial Food. Where Castree's (2003, 279) capitalistic commodification alienates through transforming an item from its origins, local food commodification reestablishes these origins through farmer transparency and the opening of local farms to agritourism. Where capitalistic commodification valuates to change a commodity into a purely monetary transaction, local farmers establish relationships and build communities to create layers of priorities beyond the transactional value (Castree 2003, 281). And where capitalistic commodification displaces through disguising the true value of an item, local farmers expose and reintegrate connections to food through their education and outreach to the consumer community (Castree 2003, 282). As Tanner (2001, 57) explained, to overcome the process of fetishism, or "accumulation for accumulation's sake," the relations between people must become a transaction of solidarity. The process of reclaiming the meaning of food involves a process of commodifying food to incorporate the values that local food farmers are striving to create, and local food and farm supporters are seeking as a part of a value in their purchase.

The values found in local food combine to create the motivations that consumers seek to purchase from the local food system. The better taste that local food consumers prefer (see page 186) was the most frequent reason given for buying local, followed by community, environmental, childhood enculturation, and finally health. Zepeda's (2009, 253) findings that freshness and nutrition are valued over cost by farmer's market customers was partially correct, however the survey results did not include the other reasons that local farm-and-food supporters in the North Texas area gave for their support.

Beyond the values being reestablished through the purchase of local food is the experience created in visiting a local food event. Attending farmers' markets and other forms of agritourism can be a way for consumers to capture some of that quality of life which was determined to be the most important aspect of success to local food farmers. By experiencing local food farming in a first-hand fashion, consumers draw more value from the food that they purchase. This quality of life that comes with notions of local food, and the way that communities are now being formed around relationships which reinforce health and environmental concerns is a different way of valuing the natural world than what has been seen in the capitalist, profit driven recent history of the United States.

The benefit of having local farms in communities, whether they be rural or urban, rich or poor, close-knit or diverse, is a topic that must be explored more to understand the ramifications of having agritourism, local farm stands, community work days, and other events that share the quality of life found in farming with the outside community. James, Hart, Banay, and Laden's (James, et al 2016, 1344) findings relating morality to exposure to greenness remind me of the outside community that James Hunter described as visiting the We Over Me Farm at the Paul Quinn College, and how they found purpose and community through working at the farm and greatly enjoyed their time gardening there.

Looking at this pattern of valuing the experience of local food farming differently and applying it to other experiences or buying habits in America, it seems that value-choices are becoming more prevalent in the American economy. The practice of buying material goods is becoming a system of choosing between multiple values and weighing impacts as well as options in this choice. With the ability to research different products in a second's time, many consumers are changing their relationship as buyers. The consumer demand for products and experiences to

carry multiple values is a way of taking back the meaning of local food, this also stands as a consumer's adaptation to the amount of agency they have in their own diet and their role as a consumer in the food system.

6.3 The Value of Knowledge

The consumer's adaptation to seek multiple values in their food choice is one benefit of the knowledge that comes from the greater access to information seen today through the internet and the information age. The values found in local food are not possible without the climate adaptive ecological knowledge which is acquired at least partially using the same form of information exchange. These past two years of research have shown me that local food farmers today realize the value of the food that they are growing, and they are striving to become educators and to lead by example in their communities. However, the discussion of their methods and the revelations of the realities of the farming world showed me that there is a long way to go for the knowledge that these farmers have and are creating to be valued to its potential.

Even in my own first steps into understanding this community, I was expecting my concerns to lie in the community being able to withstand tighter governmental controls around chemical inputs or grazing practices. I found instead farmers who are already increasing their yields with minimal inputs and instituting grazing practices that are regenerating their land. In fact, these farmers are researching and experimenting with many more ways to benefit the natural world and their local communities than I knew existed through the academic literature. Although some researchers, like Gómez-Baggethun, et al. (2013, 72), have looked to the ways TEK has withstood the passage of time, a repository of agricultural methods and adaptations worldwide or the way these methods or systems of TEK could be combined to find solutions has not been considered, suggested, or conceived.

Climate adaptive ecological knowledge is a type of knowledge found in North Texas farming because the historically harsh climate and depleted soil in the area has made local food farmers find their own mixture of adaptations from all over the world to successfully grow and increase their yields. CAEK is found in other areas, and climate ecologists like National Geographic's Alizé Carrère, and Regenerative Agriculture podcast host John Kempf are some of the lead voices documenting these adaptations for the outside world. Researchers and academics are uniquely positioned to learn these adaptations and draw attention to their value, so that policymakers and legislators are better informed of alternative solutions to national concerns.

6.4 Creating the Local Food and Farming System

Through taking back the meaning of food and finding new ways to use knowledge to create local adaptations, farmers in North Texas have been able to begin to reclaim and rebuild the local food and farming system. The values that are being created in the system are multiple, but the challenges to farming are extreme. While the benefits of local food are obvious, the tremendous tasks and obstacles to success found in local farming caused me to speculate whether the attraction to this form of farming will continue. A greater understanding of not only the authority created and the collective mobilization found in the local food movement but also the local food farmer's ability to navigate bureaucracies helps to show a different type of reason for the trend.

While it is true that there is a sort of altruism that is inherent in the local food and farming system, the term altruism is a bit of a stretch to the meaning. The sense of worth and accomplishment and reinforced want to succeed that Jay at Day Dream Farms expressed in his own image of himself when his customers expressed their gratitude (see page 198) shows a type of increase to his sense of self-worth that he experiences through this gratitude. Perhaps this is a

better explanation of the symbolic capital, or prestige that Bourdieu (1990, 119) was talking about in his forms of capital.

The experience of engaging in the industrial food system is, by definition, consistent nationally. The flow of money from many to few is direct, and the use of industrial agriculture to support industrial food is complete. The low payment of wages to undervalued workers and the presence of foods which offer very little nutritional value is paramount throughout the system. This means that the consumer's participation in the industrial food system is largely similar, resulting in many of the same consequences of industrial food causing consumers to look for outside answers to food and diet.

Beyond consumers looking for an answer to the industrial diet, there is now an emphasis on mindfulness, gratitude, and interaction with the natural world that many people seek to incorporate in their daily lives as a form of self-care. The experience of farming and participating in local food affords consumers an opportunity to engage in their diet in a more active manner. These common experiences of seeking alternate diets and prioritizing interactions with the natural world generate a local food and farming community in the manner Bourdieu (1990, 59) explained collective mobilization.

The local farmers also understand the process of neoliberalization and how they can work together within it. The collective mobilization of the local food and farming community on a grand scale through statewide conferences and regional symposiums has resulted in the generation of lobbying power and forms of group education which face these processes of privatization. Through working together, the local food farmers are beginning to gain momentum in the creation of solutions beyond the single farm.

Through understanding the detriments of the industrial food system, it is obvious that the formation of the local food and farming community is necessary. However, due to the challenges present in local food farming, it can be hard to understand why farmers persist. The symbolic capital in the gratitude felt for local food farmers today and the collective mobilization generated through common experiences with the industrial food system may better explain the organic development of the local food and farming system. The collective mobilization created through the local food farmer's common experience in the neoliberal era results in even greater changes to the power of the local food system.

6.5 The North Texas Local Food System

The local food and farming community in North Texas are building relationships around the values local food represents. They have realized the power of their actions and by celebrating these values with their community, they market and grow their farms. According to my experiences at the local farm meetings and conferences, this power is not being limited to individual farms. Local food farms are beginning to work together, as food hubs that are linking together for infrastructure, and as political entities that are working with lawyers and politicians to understand how the laws affect them and to lobby for greater rights.

Many of the local food farmers that I met brought a unique skill with them to farming which afforded them a particular advantage in business. This advantage could be interpreted as the entrepreneurialism and ability to use market mechanisms that has resulted through the process of neoliberalization, as Guthman (2008, 1177) described. An aspect of this phenomenon is that only through farmers being part-time farmers or farmers as a second career in life was the adaptive nature of their outside experience introduced into the network. In other words, people who have become farmers who were once lawyers, artists, business professionals, and marketing

managers are bringing their skills to the local farming community and using these skills to grow and reinforce the local food and farm system.

I found local farming to be a privileged system to work in due to the buy-in being so great that it takes accumulation of wealth or credit to attain a farm. However, I also found that local farmers are working to make local food accessible in varying degrees. The presence of contracts in institutions like schools and hospitals which prohibit locally grown food from being supplemented on the menu are a great barrier, as are all the qualifications to sell local food through programs like WIC, but farmers are figuring out ways. As was mentioned previously, the We Over Me Farm at Paul Quinn College not only provides local food through a WIC voucher program by working with a non-profit in the area, they have also resigned their contract with the company providing their college food supplies in order to sell cafeteria food which comes from the farm to the students and faculty on campus.

I also found through attending conferences and local food symposiums that local food farmers are working with chefs and other consumers to create lobbying power with the local food and farming system. The recent advances made in the state legislature were largely discussed prior to state congress convening, and local farmers and local food supporters evaluated their stance on the bills they would be hearing and the process of lobbying to generate greater support. As a result, many of the bills that they worked to create or change were heard and changed.

The processes of neoliberalization have made the development of local food systems questionable in some areas of the nation due to their inability to bring Alkon and McCullen's (2010, 937) "just sustainability," or equal access to food, to their communities. While it is fortifying to my faith in the local food movement to see the inclusion of farmers and the sharing

of power across the local food network, the work of ensuring access and bringing the benefits of local food to the places it is most needed have only begun in North Texas. For the local food system to make lasting change, and for it to come to offer an alternative to industrial food, a more just sustainability must constantly be sought throughout local food. Through restructuring contracts around food supply and generating the voting power needed to change policy, the local farmers in North Texas are beginning to work on the just sustainability of the local food system.

6.6 The Future of Local Food

While discussing the future of local food, many farmers spoke of growing their network of support at farmers' markets and emphasizing chef or grocer sales due to their consistency. There were multiple references throughout all the interviews about working with a farm-to-table chef community as well as grocers who try to provide locally sourced foods in North Texas. There are many ways that the local food and farming community has a plan in place and are working to reach their goals.

The future of local food, as many told it, is to grow relationships and make communities locally strengthened and supported by the network of farmers and local food supporters. Reminiscent of Escobar's (2011, 139) planetarization, the community looks to the manifold elements and relations that must be considered to create the entire local food and farming system. As I have heard the ideas of slow food (or local food and traditional cooking) discussed in meetings and conferences, the values are being extended to slow fiber, and slow money. The communities that are being grown are not restricted to farmers and local food supporters, the communities that are being grown are a return to the idea of a physical community that is locally supported.

As city leaders plan for the future of their own communities, concerns over climate change and limited access to food become more genuine. It is crucial to find alternative solutions to provide food to populated areas. The added benefits of local food help to increase the value of the city itself. Working to develop programs which sponsor and support establishing local food networks is an area of city development which leaders should evaluate for long-term alternative solutions to planning concerns.

In the North Texas area specifically, the generation of a chain of grocers who maintain the same local food integrity as producer-only farmers' markets is a needed addition to the local food scene. In the generation of these grocers, efforts to increase accessibility and decrease waste through production could be explored to maximize profit. Great value would be found in research into the generation of this type of infrastructure as the next step to reinforcing local food and farming.

Seeing the aquaponic and hydroponic systems inside of the greenhouses gave me a great moment of insight. There are many areas of the nation in need of local food and surrounded by pavement. Systems like the hydroponic or aquaponic ones that I saw would be ideal for a factory setting. These systems flip the idea that concrete means that nothing will ever grow to an idea of concrete gardens that may help renovate districts in need of access.

As a food advocate, many times I have contemplated whether the industrial food system should be somehow repaired so that we can continue to progress along our current path or if it would be better for industrial food to falter completely so that an alternative food system can be created without so many barriers. If industrial food were to falter completely, innumerable people would be negatively impacted, including widespread starvation of our most vulnerable citizens. Because I am a food advocate, any such idea is out of the question. Therefore, the

support of the local food system is even more crucial because as alternative solutions become more common, there is more room for the industrial food system to hopefully change and find a path forward. If it cannot find a way to do so, the local alternative will then hopefully be strong enough.

CHAPTER 7

REFLECTION

Taking a step back from my research and my life of farming, I realize that my perspective truly and uniquely shapes what I have found. My experience in learning about food effects this research from the start – when I had my daughter 13 years ago, through the years struggling as a single mother, through my undergraduate and graduate school years when I sought out academic and non-academic places to learn as much about food and the food system as I could stomach. Possibly even earlier experiences, such as when I was a child and I watched The Frugal Gourmet, a cooking show on PBS, daily.All these experiences have set me on the path to be able to capture many different perspectives on food, and now, farming in the way that was enclosed.

What makes farming so much more enjoyable for someone like me? Was my experience individual in my final feeling that I have found where I should be, for now, in my life? Or, is there a type of solution inherent to our world in local farming?

I think that people who have tried in their past to do things which are somewhat counter to the common American experience have had to develop a unique form of resiliency, of learning many ways to work within and through society. There is much to be said for the knowledge of working and interacting with American society, which is lost in academia, no matter how closely an anthropologist may study it. As a truth in my reflection, the harder experiences in my life have possibly made farming seem easier to me than it would be to others. Unfortunately (or fortunately), my rose-colored experience is only truly evaluated scientifically through more people outside of the farming system engaging in local farming in the same manner.

I guess I may have done this anthropology thing all wrong in the end, because I feel that this research has led me to become as invested in the local food and farming community as I am

in anthropology. As I finish this thesis, I am looking forward to focusing on our own farm and learning ways that I can help to support the North Texas local farming community and increase access to local food. But then again, maybe that means I did this anthropology thing right.

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