Food for Future Thought: Redefining sustainability within agriculture

by

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A REPORT

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ABSTRACT

In recent times climate change and sustainability have entered the conversation concerning the stability of the future. Current solutions have found ways to continue our disruptive lifestyles by limiting harm and energy consumption but are still not enough. Significant climate change contributing practices such as agriculture will need to be addressed explicitly to prevent the harmful and possibly irreversible effects of climate change and ensure food production safety and reliability for generations to come.

Sustainable agriculture practices have been established but given the economic risk, have been made difficult to implement. Even upon adapting these so-called "sustainable practices," the benefits are not entirely sustainable. The word sustainability has lost its meaning and can often be generalized as just being environmentally friendly, in fact, sustainability needs to be met through various categories. I believe to be truly sustainable; any design should function with economic, environmental, and social sustainability. In proposing a design that encompasses these sustainability categories, I believe the design can be best achieved by fusing new cutting-edge agriculture practices and agritourism. Together the design implementation should create a local food-producing attraction. The design would create local jobs, decrease the need for transportation and fossil fuel dependencies, gain community support, and generate the income for farmers to become more flexible in testing new environmentally safe agriculture practices.

In introducing multi-functional programming to sustainable farms, we can draw from current agritourism practices to benefit more than just food production but also the rural communities that host agriculture. In this project, environmentally conscious agriculture practices and agritourism practices are assessed in their ability to work harmoniously in one design for increased benefits.

Through a literature review, case study analysis, and a survey of four groups of participants, data collection was compiled and translated into design goals for a series of projective designs. The design projections were applied to a selected site in Wyandotte County, Kansas. The final site design exemplifies a sustainable agritourism park that improves and increases the local economy, community, and environmental factors. Upon completing the design, there was a follow-up focus group who volunteered in the initial survey. The focus group was conducted with the same four categories of participants classified in the survey as: Local policymakers, local traditional producers, local agritourism producers, and potential site design users. The group interview process worked to evaluate the design and projective metrics to create a greater understanding of sustainability, agritourism, and agriculture preconceptions with context of the site. After the focus group process, a final design and site performance metrics were established to set an example design idea for farmers to use as inspiration for making change.

FOOD FOR (FUTURE) THOUGHT

A MASTER'S REPORT COVERING THE FUTURE OF AGRICULTURE IN CLIMATE CHANGE

✩   *** RAINIE MADSEN   ***   KANSAS STATE UNIVERSITY   ***   TIM KEANE ***   SPRING 2021 ***

0.1 ACKNOWLEDGMENTS

0.2 ABSTRACT

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0.3 KEY TERMINOLOGY

Agritourism

Multi-purpose farm: a form of commercial enterprise that links agricultural production and/or processing with tourism in order to attract visitors onto a farm, ranch, or other agricultural business for the purposes of entertaining and/or educating the visitors and generating income for the farm, ranch, or business owner (National Agriculture Law-n.d.).

Climate Change

Climate change is a long-term change in the average weather patterns that have come to define Earth's local, regional and global climates. These changes have a broad range of observed effects that are synonymous with the term (NASA-2020).

Sustainable Agriculture

Farming in sustainable ways, which means meeting society's present food and textile needs, without compromising the ability for current or future generations to meet their needs (USDA-2007).

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CHAPTER 1

1.   INTRODUCTION

In recent times climate change and sustainability have entered the conversation concerning the stability of the future. Our current solutions work around having to change our disruptive lifestyles by only limiting energy consumption but still, are not enough. Significant climate change contributing practices such as agriculture must be addressed explicitly to prevent the harmful and possibly irreversible effects of climate change and ensure food production safety and reliability for generations to come.

This report discusses past, current, and present agriculture practices along with the issues that climate change will present. In addition, throughout this report, I have researched and designed with sustainable agriculture and agritourism techniques to understand how they can work together and benefit one another in one cohesive design to combat climate change.

Across the following eight chapters, including this Introduction, Background, Methodology, Case Study, Survey, Design Application, Focus Group and, the Conclusion, I will inform the reader about the step-by-step research process that was conducted.

Research Question

Pressing times can make it hard to offer long term solutions that are beneficial to environmental, economic, and social well being, but what if we could establish new practices and lead a new path to sustainability without having to compromise any of the categories.

What I want to know is, if sustainable agriculture could become more obtainable through the introduction of agritourism? In addition, I want to understand the benefits we could potentially see from this implementation?

> Sub Question: How does sustainable multifunction agriculture impact the local environment through these new sustainable practices?

> Sub Question: How does sustainable multifunction agriculture impact the local economy through job creation and local food sharing?

> Sub Question: How does sustainable multifunction agriculture impact local communities through the creation of rural tourism?

Dilemma

As most have become aware of global and climate changes, we are currently facing many factors that have not been considered when finding solutions to the changing environment.

Climate change has the ability to disrupt food availability and affect food quality. Projected increases in temperatures, changes in precipitation patterns, extreme weather events, and reductions in water availability may reduce agricultural productivity.

Agriculture is being affected by shifting conditions. Therefore, climate change, traditional practices, and sustainable practices will potentially play an important role as part of the climate change solution and must receive attention from many experts for a viable solution.

In further addressing the issues of climate change research will need to look at how each professional of their own field will play an important role. In cross examining agriculture the landscape architect will need much assistance from those who are agriculturalists and vice versus to provide a fully functioning solution.

How can landscape architects help design a sustainable agricultural solution that encompasses the ideas of decarbonization and the creation of both justice and jobs?

Simultaneously, can sustainable agriculture with multiple functions, such as tourism and park elements within sustainable farm designs, work for farmers?

Project Importance + Purpose

In a world where we are forced to face climate change, I am looking to understand what designers and farmers can do to combat inevitable change. Creating a design to encompass sustainability, referring to becoming economically, environmentally, and socially sustainable, will be explored.

I want to examine how combining sustainable agriculture practices and agritourism can respond to decarbonization, produce awareness, and increased funding for the design's local community.

Multi-functional agriculture designs have the potential to achieve and define a new kind of sustainability by serving a variety of programs such as tourism, education, recreation, play, retail, and food production. To understand these theories' potential, I want to test my design's ability to achieve what I deem as full sustainability, through metrics and examination interviews.

The project aims to outline the impacts climate change has had on agriculture, and the effects agriculture has had on climate change. I research and design with sustainable agriculture and agritourism techniques to understand how they can work together and benefit one another in one cohesive design to combat climate change.

Climate disruptions to agricultural production have escalated over the past 40 years and are projected to increase over the next 25 years (National Climate Assessment-2014).

Research has shown that the effects of climate change will be increasingly adverse on most crops and livestock. The issue of climate change has proven to be a cycle as agriculture production contributes a significant share to climate change – almost 17% of overall greenhouse gases are directly related to agriculture (OECD-2016). If the current cycle of our food production practices is not broken, our food sources will no longer be reliable. Switching to sustainable agriculture practices embraces less energy-intensive tools by eliminating the use of fossil fuels and overall reducing energy use to combat the environmental issues of climate change but cannot be classified as a sustainable solution.

To achieve complete sustainability within an agriculture design, there will need to be another step, and I believe the missing step is agritourism. Encouraging ex-urban migration through rural tourism will bring people out of the city and to areas like a farm for a new, immersive and educational experience. As sustainable agriculture focuses on the environmental impacts, it does not contribute to the economic and social aspects of sustainability that agricultural tourism addresses.

The urgency for this research and design implementation will be to find a solution to the issue of climate change that addresses the main categories of sustainability together in one design working with sustainable agriculture practices and agritourism. Creating a multipurpose agricultural design can show the true extent of farmland productivity and become a future example of multi-function sustainable agriculture design.

iv.   **Report Organization**

The report is organized into eight chapters separating each step of my research process. The research started with the introduction (this chapter) addressing the purpose for the research, the questions, topic, and dilemmas. Next the report covers the background information on the topics of sustainable agriculture and agritoursim. The methodology

chapter reviews the step by step organization to the research process. Following that chapter is the first methodology step, the comparative analysis. The comparative analysis chapter consists of researched case study projects and design guides. Next is the survey chapter including the survey questions and results. Then there is the design application chapter showing the research findings translated into a physical design. Following is the focus group reviewing my design proposal and its plausibility. Finally is the conclusions chapter will summarize and close the report (See Figure 1.01).
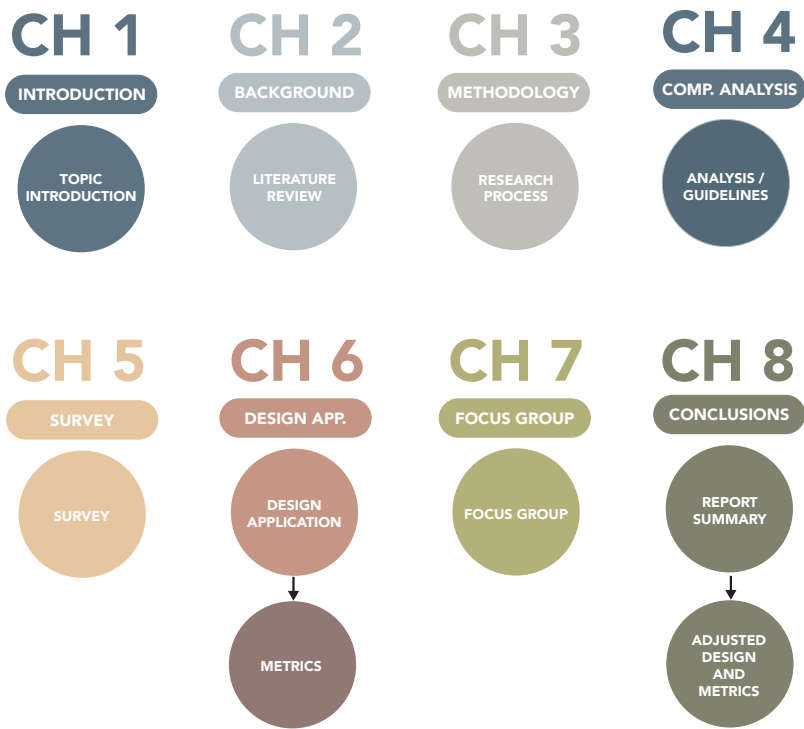
Figure 1.01
Overall Report Organization (Madsen 2021)

CHAPTER 2

2.   BACKGROUND

In this section, I lay the foundation for the report. The background is comprised of information gathered through a process called literature review. Through this process, I have researched relevant topics such as climate change and the issues it could present, agriculture, its history and its future, sustainability and the hesitations for implementation, Agricultural Tourism, and its potential for design, and last, I summarize my findings and explain what the research means.

The background portion of the report and process is the leading step of this research. I work to comprehend and reference my findings through the literature review and use this information to carry ideologies about my research topic to the conclusion of this research.

The following information is displayed with images and graphics following the text. Additionally, a literature map can be found on page 183, visualizing the direct connections between authors and sources derived from the literature review.

Agriculture - Current Practices and Issues - The Problem

The U.S. has always been quick to embrace technology and industrialization. Following World War II, as the technology was finding repurpose for civilian use, these new interventions such as electric powered machinery and pesticides made products seem safer, healthier, more nutritious, and more trustworthy than those that were "natural." For Americans who experienced hunger and devastation through the Great Depression, it seemed critical that industrializing food production was the only way to feed the rapidly increasing population (FoodPrint-2020).In the mid-1950s, a policy proposal to "modernize" farming addressed what they saw as its economic inefficiencies. At the time, there were too many workers farming the land and not enough in the factories. The proposal worked to eliminate 1/3 of farm families, replacing the network of millions of sustainable family farms with larger farms producing equal amounts of food but more "efficiently" (Ikerd-2013).

Large scale ''efficient" production became one of the most standard and practiced agricultural systems, also known as "conventional farming" or "industrial farming," and has contributed tremendous gains in mass production. Globally food production has risen over the past 50 years. The World Bank has estimated that roughly 70-90% of recent increases in food production result from conventional agriculture rather than sustainable cultivation practices. Given the industrial reliance, U.S. consumers have grown to expect an abundance of inexpensive food (USDA-2007).

As intensive agriculture is nourishing to the earth's inhabitance, it is doing the opposite to the earth itself. Our current dependence on heavy plowing machinery, fossil-fuel usage, and chemicals such as fertilizers and pesticides have made significant negative contributions to climate change (Rial-2019). In the 1920s, the U.S. housed roughly 6.5 million farms. Since then, the number has diminished to a mere 2.04 million by 2017 (USDA NASS-2019). Correspondingly, production has continued to shift to larger farms specializing in two or three crops or livestock. In 2017, farms that managed an average of 2,600 acres grossed over $1 million compared to farms with an average of 80 acres grossing roughly $10,000 (Carlisle-etal-2019a). These large scale and energy consumptive practices contribute to the effects of climate change and degrading our environment and wildlife.

Negative impacts include (USDA-2007):

1. Decline in soil productivity could become prominent. Due to extreme wind and water erosion soil will become more compacted, loss of water holding capacity, and exposure of topsoil. In addition, desertification due to overgrazing is a growing problem with livestock.

2. Agriculture is the largest single non-point source of water pollutants including sediments, salts, fertilizers, pesticides, and manures. Pesticide chemicals found in groundwater are commonly linked to agriculture. Reduced water quality is likely to impact agricultural production and drinking water.

3. Water scarcity in many places is due to overuse of surface and ground water for irrigation with little concern for the natural cycle that maintains stable water availability.

4. Other environmental effects could result in an increase in insects and pests that will be more resistant to pesticides.

5. Reduced genetic diversity due to reliance on genetic uniformity in most crops and livestock breeds.

Climate Change - The Issue

Climate change is a long-term adjustment in global and regional climate patterns that will continue to pose a threat to our current way of life. Often climate change references natural effects on our present surroundings referring to the global temperature, sea level rise, and other natural disasters seen in the mid 20th century to present, negatively changing our environment (National Geographic Society-2019). Across the U.S. climate change has been seen in a variety of effects. For instance, in the Mid-West there are likely to be more downpours leading to flood whereas in locations in the West such as California are more likely to experience drought and wildfire risks (Simmons-2019). The National Climate Assessment report projected that warming temperature, rising heat, major drought, wildfire, and extreme storms events will increasingly disrupt agricultural productivity and create a threat to our food security, quality, and price stability (Simmons-2019). These more extreme weather conditions are likely to harm agriculture in both livestock and crops. Major storms have always devastated farms and now they are becoming more common. The Midwest agriculture is likely to be effected by a variety of climate change effects, descriptions of which follow:

Temperature:

The temperature levels nationwide have aggressively risen over the past few decades. "U.S. average temperatures have increased by 0.6 F since record keeping began in 1895; most of this increase has occurred since about 1970" (Horton-etal-2014 P. 28).

The heat rise will affect raising livestock and the crops growth ability, in addition increase plant vulnerability to salmonella and fungi which thrive in warmer environments.

Water Scarcity:

In the event of rising temperatures, heat will create dry conditions for the Midwest and inland states posing threats on various types of agriculture, specifically in Kansas. Water scarcity can make it more difficult and expensive to sustain crops and livestock. The lack of adequate water can damage and destroy crops through excessive and unconditioned dry soil. For example, between 2014-2016 California endured an almost $4 billion economic loss to agriculture as a result of drought (Simmons-2019).

Due to overall warming, other regions could face insect outbreaks and extreme natural disasters such as wildfires. Effects could result in major impacts towards ecosystems and many varieties of agriculture practices (NASA-2020).

Change in Season:

As the temperatures year-round continue to adjust the growing season begins to adjust. Growing seasons are starting earlier and getting hotter. A longer growing season may potentially show advantages but could also result in an uptick in pest populations. Earlier spring onset can cause crops to grow before the soil holds the proper water and nutrients. Warmer winter can also affect other agriculture practices like grain storage (Simmons-2019).

Wildfire:

Both drought and rising temperatures can contribute to wildfire risks. Ranchers across the west have seen major loss as a result of charred grazing land and decimated hay stocks. Excessive smoke from the major fires could also create respiratory issues for laborers and even livestock (Simmons-2019).

In less direct effects climate change has also had an increasing effect on tourism. Many types of tourism are dependent on weather patterns. For instance climate change could alter snow cover and seasonal schedules making winter vacationing less appealing or prolonged heat waves and altered rainfall patterns can make outdoor vacationing unbearable. For many regions and countries that rely on tourism the effects of climate change could be detrimental to their economy as well as their way of life (EU-MACS-n.d.).

iii.   **Addressing Climate Change**

I believe the problems we are facing in both climate and agriculture can be solved through greater sustainability. Supporting both sustainable agriculture practices and implementing agricultural tourism will work to achieve all economic, environmental, and social factors of sustainability (See Figure 2.01).
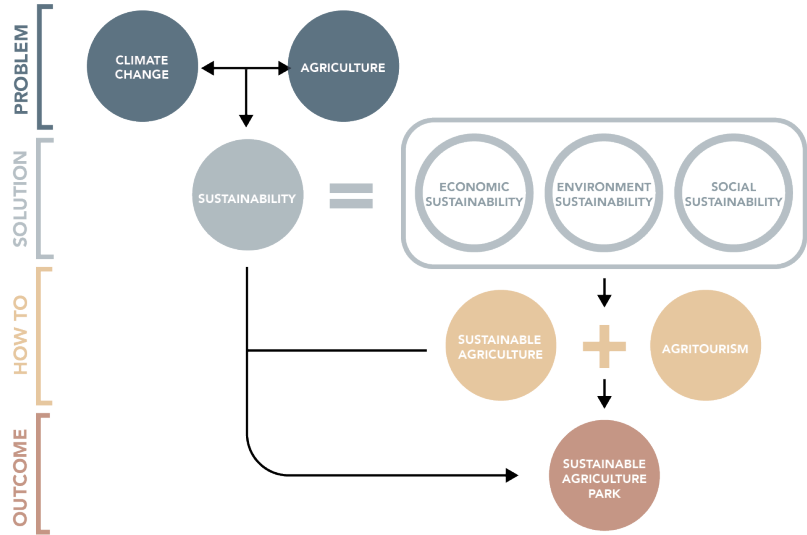
Figure 2.01
Topic Ideology (Madsen 2021)

iv.   **Sustainability**

All farmers strive to be sustainable and most believe they are. Sustainable practices are most commonly referred to as environmentally sustainable practices, while this is part of sustainability it is not the only consideration. To be (in a sense) at a standard to qualify being sustainable means that meeting social and economic sustainability is equally important to be addressed as the environmental factors. Considering how a site design positively influences its environment, economy, and community can be a way to measure its ability to achieve sustainability.

v.   **Sustainability in Agriculture – Step 1 Solution**

As we advanced agriculture, we have allowed for humans to create expanding and growing populations. Science has made it possible to manipulate landscapes and ecosystems to not only meet their needs but meet the needs of other people from different cities and cultures. With this ability we have catered to these growing needs with limited remorse to our earth and its dwindling resources. Water, fuel, and soil are the three most important and necessary factors determining our survival as humans in the 21st century due to their high demand from society. Conventional agriculture (as it continues to be practiced) cannot meet the needs of the current population and will continue to compromise earths integrity all in the name of survival (Stony Brook University).

Sustainable agriculture is known as the production of plant and animal products, including food, in a way that uses farming techniques that protect the environment, public health, communities, and the welfare of animals. Sustainable agriculture allows us to produce fresh food without compromising the ability of future generations to do the same. The key to sustainable agriculture is finding the right balance between the need for food production and the preservation of environmental ecosystems.

Sustainable agriculture also promotes economic stability for farms and helps farmers to better their quality of life (Kukreja-2020). The social, economic, and environmental benefits of this system lead to sustainable agriculture becoming the most viable way to accommodate growing

trends (Stony Brook University). In comparison, of both sustainable agriculture and conventional agriculture, organic farming methods are shown to perform much better for a number of indicators. Sustainable agriculture has potential with new inventions and practices such as creating alternatives for gas known as biofuel that is significantly more environmentally friendly. Studies have shown E85 produces 39 percent less carbon dioxide than traditional gasoline and has the ability to run in a regular diesel engine. Interestingly enough E85 is carbon neutral in the sense that it emits the same amount of carbon through combustion as it absorbs in its corn plant lifetime (Roos-2012).

Need for Sustainable Agriculture: The last century took American agriculture from the horse and plow to increasingly specialized technology that allows a smaller population of farmers to feed an ever-growing world. As the world population continues to grow, sustainable agriculture is becoming a more important focus for all types of producers (Mundahl-2017). Sustainable agriculture is among the most urgently needed work in the United States, for at least three reasons: the environmental crisis, health crisis, and rural economic crisis (Carlisle-etal-2019a).

Sustainable agriculture is critical to:

1. Reducing our carbon footprint, sequestering more carbon in ground, curbing air/ water pollution, conserving water/ energy, stemming topsoil loss and biodiversity, and restoring habitat for pollinators and other keystone species (Carlisle-etal-2019a).

2. Creating a greater supply and along with better access to nutritious food to curb epidemic rates of costly diet related disease (Carlisle-etal-2019a).

3. Improving economic development in rural areas of the U.S., where a quarter of children live in poverty (Carlisle-etal-2019a).

As a result of global and climate changes, agriculture in the U.S. and around the world is facing a variety of pressures (Mundahl-2017). Many new programs such as "Kickstart Food" have been initiated to accelerate the transition to sustainable agriculture. The program is a $1 billion initiative to boost environmentally sustainable and stable food production while decreasing waste (Mundahl-2017).

By addressing these pressing crises through sustainability, the transition will require growth in the agricultural workforce in creating new job opportunities but increasing collaboration and shared knowledge of professionals in many fields.

vi.   Setbacks of Sustainable Agriculture

The definition of sustainable agriculture is forever changing as it is reflexive. Sustainable agriculture can often be dependent on an areas culture and geography, this is why there is no easy way of measuring a farming operations ability to successfully practice sustainability.

Last year organic food accounted for just over 5 percent of all food sales. If sustainable farming necessarily means organic farming, then achieving the production growth needed to feed the world in 2100 would make food much more expensive (Mundahl-2017). As sustainable practices typically produce less, supply is limited compared to its demand. Production costs are also higher due to the greater amount of labor needed for less produce; it is harder to meet market costs. As the demand for organic food and products is increasing, technological innovations and economies of scale should reduce costs of production, processing, distribution and marketing for organic produce (FAO-2020).

The best way to address these setbacks are through the implementation of agritourism. Generating a local buy-in from the community (potential consumers) as well as educating the community of agriculture and local food can gain its support to ensure social and economic stability.

vii.   Sustainable Practices

Rotating crops:

Crop rotation is a powerful technique of sustainable agriculture. Its purpose is to avoid the consequences that come with planting the same crops in the same soil for years in a row. It helps tackle pest problems, as many pests prefer specific crops. If the pests have a steady food supply, they can greatly increase their population size. Rotation breaks the reproduction cycles of pests. During rotation, farmers can plant certain crops, which replenish plant nutrients. These crops reduce the need for chemical fertilizers (Sustainable Settings-2016).

Cover Crops:

Many farmers choose to have crops planted in a field at all times and never leave it barren (See Figure 2.02). This can lead to additional consequences. By planting cover crops, such as clover the farmer can prevent soil erosion, suppress the growth of weeds, and enhance the soil quality. The use of cover crops also reduces the need for chemicals such as fertilizers (SAREP-2017).

Soil Enrichment:

Soil is a central component of agricultural ecosystems and can often become damaged by overuse of pesticides. Maintaining good soils can increase overall yields as well as help create more robust crops. It is possible to maintain and enhance the quality of the soil in many ways. Some examples include leaving crop residue in the field after a harvest, and the use of composted plant material or animal manure (Kukreja-2020).

Natural Pest Predators:

In order to maintain effective pest control, it is important to view the farm as an ecosystem as opposed to a factory. For example, many birds and other animals are natural predators of agricultural pests (Kukreja-2020).

Figure 2.02
Cover Crop Rows (Madsen 2021)

Agroforestry:

Agroforestry is a powerful tool for farmers of dry regions with soils susceptible to desertification. It involves the growth of trees and shrubs amongst crops or grazing land, combining both agriculture and forestry practices for long-lasting, productive, and diverse land use when approached in a sustainable way (See Figure 2.03). Trees also maintain the favorable temperature, stabilizes soils and soil humidity, minimizes nutrient runoff and protects crops from wind or heavy rain working to protect crops from external elements (USDA-2019).

Intercropping:

This technique involves growing multiple crop species in one area. These species often complement each other and helps produce a greater diversity of products while fully utilizing available resources. High biodiversity creates more resilient to weather fluctuations and applies natural mechanisms for maintaining soil fertility (Lithourgidis-etal-2011).

Figure 2.03
Agroforestry (person 2021)

Bio-dynamic Farming:

Biodynamic farming often focuses on the diverse implementation of composting, the application of animal manure, cover cropping complementary crops for generating the necessary health and soil fertility for food production. Biodynamic practices can be applied to farms that grow a variety of produce, gardens, vineyards, and other forms of agriculture (Biodynamic Association-n.d.).

Better water Management:

Issues like river depletion, dry land and soil degradation will develop without a well-planned irrigation system. The application of rainwater harvesting systems by storing rainwater can be used in drought prevailing conditions. Apart from that, municipal wastewater can be used for irrigation after recycling (Kukreja-2020).

Permaculture:

A food production system with intention and design to reduce waste of resources and increase production. Permaculture design techniques include growing grain without tillage and creating swales to hold water in high elevation. In these designs each plant can serve multiple purposes. It focuses on the use of perennial crops such as fruit trees and shrubs that function in a system to mimic a working ecosystem (Sayner-n.d.).

viii.   **Benefits of Sustainable Agriculture**

The environment plays a huge role in fulfilling our basic needs to sustain life. In turn, it is our duty to look after the environment for future generations, making it possible to support their future needs. Sustainable agriculture helps to replenish the land as well as other natural resources such as water and air.

By adopting sustainable practices, farmers will reduce their reliance on nonrenewable energy, reduce chemical use and save scarce resources. By actively pursuing replenishment we can ensure that these natural resources will be able to sustain life for future generations considering the rising population and demand for food (Kukreja-2020).

Saves Energy for Future:

Modern agriculture is heavily dependent on nonrenewable energy sources, especially petroleum. Sustainable agricultural systems have reduced the use of fossil fuels with the substitution of renewable sources or labor to the extent that is economically feasible (Kukreja-2020).

Meeting Food Needs:

Due to population increase, it is estimated that by 2050 we will need approximately 70% more food than is currently being produced in order to provide the estimated 9.6 billion world population with their recommended daily calorie intake (Ranganathan-etal-2018).

We all need to eat, but by simply reducing food loss and waste we can take the first step to meeting the production/market needs. Through investing in sustainable practices we can understand what we can do to make a difference to the currently comfortable practices (Kukreja-2020).

Biodiversity:

Sustainable farms often produce a wide variety of plants and animals, resulting in biodiversity. Plants can be seasonally rotated, and this results in soil enrichment, prevention of diseases, and pest outbreaks (Parris-2020).

Prevents Pollution:

Any waste a farm produce remains inside the farm's ecosystem. Meaning waste cannot cause pollution (Horrigan-etal-2002).

Prevent Soil Erosion:

Numerous practices have been developed to keep soil in place, which includes reducing or eliminating tillage, managing irrigation to reduce runoff, and keeping the soil covered with plants or mulch. Selection of suitable species and varieties that are well suited to the site conditions can improve crop yield and diversification (including livestock). Cultural practices can enhance the biological and economic stability of the farm (Montgomery-2007).

Sustainable Livestock Management:

Sustainable livestock production can be achieved through the selecting appropriate animal species, animal nutrition, reproduction, and grazing management, which leads to overall development of livestock for the long term (Kukreja-2020).

Public Health Safety:

With less hazardous pesticides and fertilizers farmers can produce safer produce for both the consumers and the workers. With the proper waste management, producers can protect surrounding communities from exposure to hazardous pollutants (Horrigan-etal-2002).

Economic Benefits For Farmers:

In exchange for engaging with sustainable farming methods, farmers receive a fair price for their produce. Justifying fair wage greatly reduces a farmer's reliance on government subsidies and strengthens rural communities. Organic farms typically require 2 ½ times less labor than factory farms yet yield 10 times the profit. (Wing-2016).

Prevents Air Pollution:

Agriculture has the potential to affect air quality by smoke through agricultural burning, dust from tillage, and nitrous oxide emissions from the use of nitrogen fertilizer. By incorporating crop residue into soil and planting windbreaks, cover crops or strips of native perennial grasses can all improve air quality (Martinez-2015).

Benefits Takeaways:

Although the overall benefits of sustainable agriculture are mainly aimed at addressing environmental sustainability does not mean there is not potential for expansion. With the additional implementation of agritourism, sustainability could be addressed in all three of its categories; environmental, economic, and social sustainability.

ix.   Implementation Gap

When implementing sustainable practices, there has been hesitation from traditional farmers to make the switch. One of the biggest hurdles has been establishing a financial investment. Switching from current practices will take money and time, which can be hard to sacrifice, especially when certain produce can take years to develop before revenue can be made. The idea of limiting potential revenue can be scary in a situation with no other direct benefits (Cannon-2017).

The transition can be made more accessible with credit aimed at encouraging green farming but how can it expand? In a new wave of involvement for farmers the term agritourism or agriculture-based tourism has been on the rise. Agritourism, in recent examples, has been shown to increase the market margin for farmers to sell their produce, which in turn has many other positive effects. Combining the benefits of sustainable agriculture practices with the benefits of agricultural tourism might be the answer we need to change the direction current agriculture is leading us.

x.   **Agritourism**

Agritourism is a field that is growing in popularity as producers diversify to increase profits. Simply, agritourism is the crossroads of tourism and agriculture, it can be defined as a type of commercial enterprise that links agricultural production and processing with tourism in order to attract visitors onto a farm for the purposes of entertaining or educating (National Agriculture Law Center- n.d.).

> *"Agritourism gives producers an opportunity to generate additional income and an avenue for direct marketing to consumers. It enhances the tourism industry by increasing the volume of visitors to an area and the length of their stay. Agritourism also provides communities with potential to increase their local tax bases, create new employment opportunities, education opportunities to the public, helps preserve agricultural lands, and allows development in business." (National Agriculture Law Center- n.d.)*

Agritourism presents a unique opportunity to combine both the tourism and agriculture industries to provide financial, educational, and social benefits to tourists, producers, and communities (National Agriculture Law Center- n.d.). We have seen many examples of agritourism ranging from small/seasonal operations such as corn mazes or Christmas tree farms to industrial sized wineries and breweries that mainly operate through tourism. Recognizing the multi functions these agricultural sites have, is the start to enhancing their functionality (Whitt-etal-2019).

xi.   **Sustainability in Agritourism - Step 2 Solution**

Along with recognizing the multi-function of agriculture and tourism we can start to recognize its potential for sustainable production as well. Bringing sustainability to agritourism is a more urgent matter than it might seem. In some cases, we have seen the effects of climate change in tourism attractions. Activities that are recreational centered can depend on a specific climate. As the temperature and conditions fluctuate, less visitors will want to be outside, and the agritourism style business will lose its income source. According to a United Nations report on climate change and tourism, climate change has also been affected by tourism, as it is responsible for about 5 percent of global greenhouse gas emissions. A vast majority of these emissions come from getting tourists to and from their destinations (Christoff-2017).

xii.   **Agritourism Elements**

Agritourism designs need 3 basic components (Adam-2001).

1. Something for visitors to see
2. Something for visitors to do
3. Something for visitors to buy

Relating the various components through a theme and creating real-world connections can determine how successful your entertainment enterprise will be. Incorporating things to see and do can be offered free of charge but creating a direct market source can increase sales and profit greatly. Research has shown that tourists buy mainly food, beverages, and souvenirs for increasing additional profit, but the overall benefit is the awareness of local food production to surrounding community members and visitors. (Adam-2001).

Current agritourism can be seen in the common forms such as brewery tours and wine tastings at wineries and in some cases its petting zoos, these examples are just surface level for the potential visitor involvement our future designs can encompass. We can take this existing structure in which wineries and breweries operate such as touring the farm/property, providing an activity something to do or see and create a market for merchandise from the activity. This system of drawing people in with entertainment and providing them with educational, social, and economic opportunities and experiences that contribute to sustainable possibilities. This success would help prove the multifunction use of farms that can become more commonly recognized and utilized amongst the landscape architecture profession.

xiii.   **Community Supported Agriculture (Programs)**

Community Supported Agriculture (CSA) has become a popular way for consumers to buy local, seasonal food directly from a farmer. Basically a farmer can offer a certain number of "shares" to the public. Typically the share consists of a box of vegetables, but other farm products may be included. Interested consumers purchase a share (aka a "membership" or a "subscription") and in return receive a box (bag, basket) of seasonal produce each week throughout the farming season. Usually this arrangement can benefit both the consumer and farmer (Demuth-1993).

Farmers will have a greater ability to market earlier and stronger with consumer involvement. In addition, payment will be reliable and earlier in the season. Lastly, farmers will have the opportunity to interact with the consumer to benefit their business, what locals want and need (See Figure 2.04). Consumers will have easier access to fresh and local foods while getting exposure to agriculture production. The community will have stake in something which will increase and generate more support surrounding local food production (LocalHarvest-n.a.). It's a simple enough idea, but its impact has been profound. Tens of thousands of families have joined CSAs, and in some areas, it has been calculated that there is more demand than there are CSA compliant farms to fill it (LocalHarvest-n.a.). Raising awareness for community involvement in local farms will be a big step in social and economic support.

Figure 2.04
Chickadee Creek Farmer's Market (person 2021)

xiv. **Agritourism Practices**

Tourism Typology

Being based on a working farm, tourism implicitly comes into some form of contact with agriculture in terms of a shared physical environment. However, the level of contact tourists has with agricultural activities in a working farm scenario can vary considerably. Its suggested that tourist contact with agricultural activity can be separated into three types (Phillip-etal-2010).

Passive contact:

Passive contact with agricultural activity indicates that tourism and agriculture are operated independently and the only commonality is the farm location (Phillip-etal-2010).

Indirect contact:

Indirect contact indicates a secondary connection to agricultural activity within the tourist experience, perhaps through contact with agricultural produce (e.g. crop maze, food processing, sale of or consumption in meals) (Phillip-etal-2010).

Direct contact:

Direct contact with agricultural activity indicates that agricultural activities are a tangible feature in the tourist experience (e.g. milking a cow or harvesting a crop) (Phillip-etal-2010).

Types of Agritourism Experiences (Phillip-etal-2010)

Fusing the tourism typologies to a working farming operation will begin to define the type of agritourism experience that can be offered. Each of the typologies can create an experience spanning from voluntary labor for benefits for those who seek a farmers lifestyle experience to quite the opposite for those who are looking to just pass by and/or observe. These varied options paired with the right farming operation each have the potential for success.

Working farm, passive contact agritourism:

Examples of passive contact agritourism include (product based) on farm resources such as outdoor spaces for recreation (e.g. activity centers) and additional outbuildings for short/long term occupation (e.g. holiday cottages and venue space).

Working farm, indirect contact agritourism:

Indirect contact may happen through the consumption of the farm produce in tourist meals served in accommodations or cafés, or through sale to tourists at farm shops. On-site processing of agricultural goods is key example (e.g. visiting a winery or butter-making demonstration).

Another example which is growing in popularity is crop mazes, this is when farmers grow arable crops (e.g. corn or maize) into a maze design to construct a seasonal tourist attraction.

Working farm, direct contact, staged agritourism:

In this instance tourists contribute to the farm economy with labor in return for accommodation and often food. As an example, crops that must be hand-picked, such as berries, grapes, or olives, also present a fitting opportunity.

xv. **Agritourism Benefits**

Rural and farmland areas face a wide range of problems, such as the growth of the unemployment rates, impoverishment of soils, hydrogeological instability, and loss of traditions. In particular, agriculture has been recognized as essential to reducing poverty and promoting rural development (Ammirato&Felicetti-2014). Agritourism practices have also been recognized for their additional income and tax reducing abilities. For taxing purposes, with respect to federal taxes, agritourism activities are handled differently than production agriculture and can be managed separately.

Agritourism can be classified as a non-farm business activity. As for the IRS, farming includes things like growing and harvesting crops, raising livestock or poultry, and preparing unmanufactured farm products for market and delivery to market. On the other hand, hosting weddings and corn mazes, for example, are considered non-farming activities (FarmCommons-2018).

The agritourism practice could potentially revitalize rural economies, support rural tourism, educate the public about farming, and local food production, and preserve agricultural heritage (Whitt-etal-2019). Agritourism enables experiences with farm activities like incorporating livestock interactions and animal exhibits. Experiencing farm life can connect culture and history-based tourism. Overlapping programming from other sectors such as recreation or retail can link agriculture experiences to more opportunities to be experienced. Other linkages such as nature tourism can raise awareness of local and regional features for landscape appreciation. Agritourism can create various agricultural experiences for visitors, increasing food production education and

appreciation for farmers. Small farms have become dependent on agricultural tourism as it can provide diversity and, more importantly, ensure more than one stable income. Agritourism activities can occur both on and off-season, creating an entirely separate stream of income. Previous studies have found that agritourism practices can benefit the local rural communities by creating rural tourism within the area. The increase in traffic can create an economic boost and be beneficial to rural areas needing diversified streams of income. Additional income can come from various charges such as admission fees, tour fees, facility rental, farm lodging, tasting fee, and mostly direct marketing and food service (Adam-2001).

xvi. **Analyzing Tourism Impacts**

There are existing indicators to measure a sites tourism ability also known as tourism competitiveness. The indicators refer to the ability of the place to optimize its attractiveness for residents and non-residents, to deliver quality, innovative, and attractive (e.g. providing good value for money) tourism services to consumers. These measures also work to gain market shares on the domestic and global marketplaces, while ensuring the available resources supporting tourism and used efficiently and in a sustainable way (Dupeyras-etal-2013). The following list of core indicators explain ways designs can be measured and applied as metrics. Core tourism indicators:

Economy - Direct Gross Domestic Product:

Tourism is one of the world's most important gross domestic product industries. Tourism direct gross domestic product corresponds to what generated by all industries directly in contact with visitors and as popularity in tourism increases, tourism gross domestic product increases. The focus of the indicator is on the growth or decline year-on-year. The indicator can be shown as a percentage of a whole gross domestic product (Dupeyras-etal-2013).

Environment - Natural Resources and Biodiversity:

Natural resources are important elements and can be a key driver of attractiveness for a destination. The ability to ensure recognition of the natural while maintaining its integrity is a success. This natural resource indicator can be measured with the number of recognized natural and preserves areas in addition to recognized sustainable maintenance practices Dupeyras-etal-2013).

Community - Cultural and creative resources:

Destinations that are able to offer unique experiences through local culture have a competitive advantage. The cultural and creative resources indicator can be measured in the number of recognized cultural attractions that support and commemorate local history (Dupeyras-etal-2013).

Implications

One implication of sustainable agritourism design is that farmer and tourist perceptions of authenticity can potentially be quite different, primarily because their original understanding of agriculture and what it entails is quite different. Multi-functioning sustainable agriculture designs also show how agricultural activities staged by the farmer for tourism may be perceived by tourists as providing a genuine insight into farming practices.

As farmers and ranchers practicing agritourism increase incoming revenue, more farmers and ranchers may be encouraged to adopt agritourism activities. In some cases research has shown a loss of mid-size farms, agritourism revenue may offer the additional source of income they need to thrive (Whitt-etal-2019). In studies, female operators were more likely to participate in agritourism, particularly on larger agritourism farms. Older operators were slightly more likely to adopt agritourism than younger farmers, all else being equal. In addition, farms and ranches that processed or sold food for human consumption, such as participating in local or regional food systems, were also more likely to adopt agritourism. This data recognizes trends in agritourism implementation as well as highlights what needs to be addressed or included when designing for an agriculture and tourism based business.

Direct-to-consumer marketing (such as farmers markets) and direct-to-retail food sales (such as selling to restaurants) provide free marketing for agritourism enterprises through word of mouth. Lastly, farms and ranches with cattle and horses had a greater likelihood of implementing agritourism. Horses in particular are associated with higher value agritourism enterprises, such as dude ranches (these are ranches specializing in tourist activities, including camping and horseback riding) and often draw/attract people looking to experience and discover something new.

Literature Summary: How Does It All Contribute

In summary, the literature outlined the current practices used in both sustainable agriculture and agritourism. This research has highlighted the current issues that need to be addressed as well as set the base knowledge for creating a sustainable agritourism design. It was found that current agriculture practices and climate change effects are working against each other to create a larger problem needing to be addressed. Overall the research process has shown how sustainable agriculture and agritourism will work to benefit each other to create a design solution (See Figure 2.05). Sustainable agriculture can help bring an extra draw to agritourism with educational factors. In contrast, agritourism can allow the switch to sustainability by providing a secondary income to support the farmer's when there is a pause in production. Depending on the farmers current financial and crop production standing, the implementation of agritourism can become the first step towards a sustainable future in the field of agriculture and food production.

With the idea of bringing agriculture and farms to the public and vice versa bringing public accessibility to farms we can begin to recognize the multifunctional opportunities these spaces provide, once private spaces becoming occupiable experiential moments and memories for people. Overall sustainable agriculture and agritourism combined benefits will meet all three categories of sustainability to; create local food production that limits the need for food transportation, inform the community of local food sharing, gain community buy-in through the education of these practices, generate the funding for flexible farming practices.
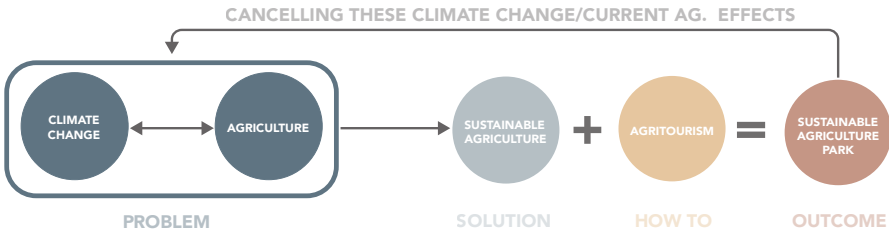
Figure 2.05
Topic Process (Madsen 2021)

3 CHAPTER

3. METHODOLOGY

In this chapter, I outline the steps to organize my process. I explain why I chose the methods used, the specific procedure the methods were exercised, and how the preferred methods of case study, projective design, and survey and a secondary focus group, all work together to address the report's basis. The order of the methods also works to inform the research and design processes as well as guide and influence final design.

The methodology consists of the information gathered through the literature review and the found design potential for agriculture and agritourism to visually express my response to the research question. This process is explained through a variety of text, graphics images, and tables.

Methodology: Overview

The methodology process includes a literature review, comparative analysis, survey, design application, and focus group that results in a final revised design with metrics to measure the potential impact of my design (See Figure 3.01). Through a literature review, I compiled and analyzed relevant information on sustainable agriculture and agritourism practices. I selected a series of case studies based on criteria gathered from practices recognized through the literature review. The chosen case study projects helped outline the existing procedures sustainable agritourism has contributed. Case study assessments have resulted in project elements and a set of design guides that were applied to a projective design. Before designing, I conducted a survey shared with Wyandotte County agriculturalists and potential users. The participant categories were; current and local agriculture policymakers, current agritourism involved producers, current traditional producers, and potential users.
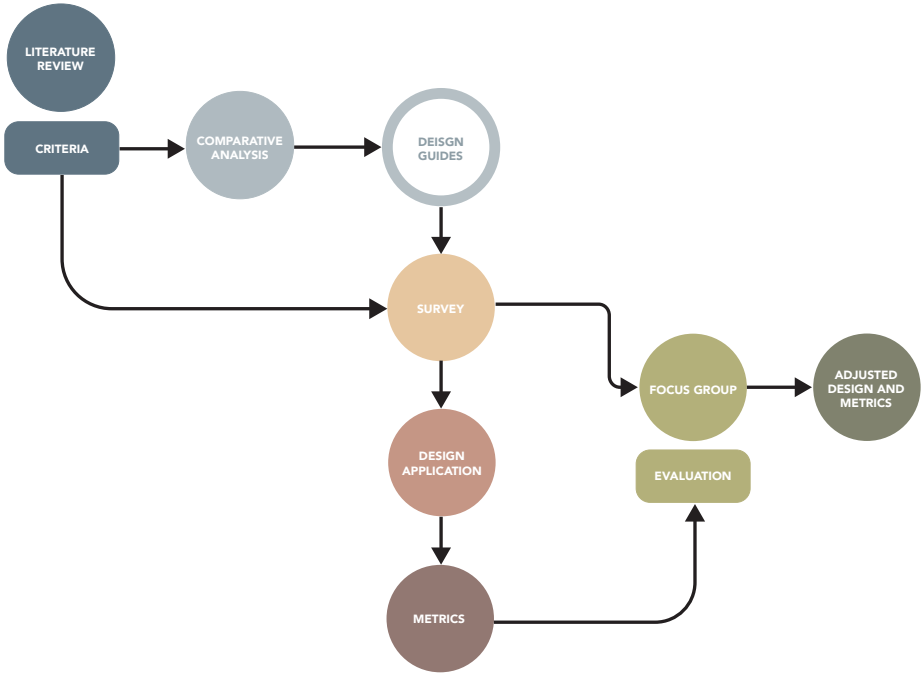
Figure 3.01 Methodology Process
(Madsen, 2020)

Upon completing the survey, there was an option to volunteer in a secondary focus group portion later. In combination with the case study and survey, I had sufficient data to start the design process.

The design projections tested the design capacity for a multi-programmed site, including all farming and tourism elements. Once design options had been explored, I applied the design to a selected location in Wyandotte County, Kansas. After placing the design in a real and rural setting, I then had to balance design versus demographics and found the design metrics. The set of metrics were originally derived from the existing Landscape Performance Metrics from the Landscape Architecture Foundation (LAF) and were adjusted to fit my design guides established earlier. The metrics are used to understand the impact my sustainable agritourism park could potentially have on a real community.

Once the design was complete and metrics were calculated, I could host the interviews that acted as an evaluation or review to critique my design implementation. After the group interview process, I adjusted the projected design and metrics.

ii. **Case Studies**

In a series of case studies, I analyzed how existing agritourism projects helped my decision-making process when designing. Case study projects were selected to provide various practices and styles of agritourism that were analyzed for comparison. Overall, I wanted to assess how the fusion of tourism and sustainable agriculture is currently being practiced.

I first evaluated the case study project examples by their existing programming and the scale/size farm the project was located on. Understanding their functional land use percentages helped influence the site's design organization. I also compared each project with its agritourism styles, what they are, and how they were able to function multi-seasonally. Last, I compared their sustainable farming methods, what types, and at what scale they were applied. Besides the criteria, to help with future metrics analysis, I searched for factors such as the project's ability to increase jobs and sustainable farming awareness within the community. The criteria for selecting the case studies are…

1.Location:
Can be located anywhere to address a range of farming operations.

2. Size:
The site must range from 25 acres to 2,000+ acres in size. This case study analysis should show a range of designs. As the scale increases so should the programming and productivity.

3. Year Round:
Must be a current year-round functioning and/or producing agritourism attraction that produces local food.

4. Agritourism Typology:
Must be classified as a typology of agritourism; passive, indirect, or direct. At least one of each.

5. Sustainable:
The site must produce crops with sustainable practices.

Five case study projects were selected, each farm is unique in their practices. The projects are located in both the United States and Canada (See Figure 3.02).
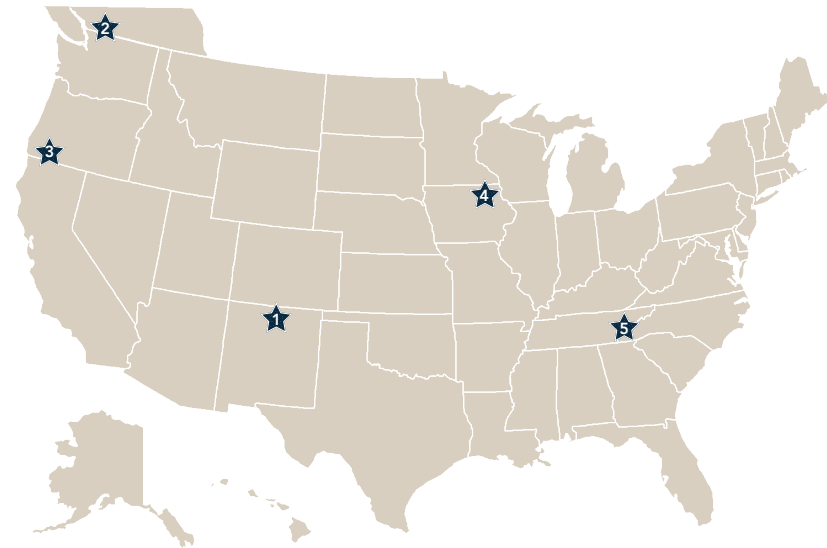
Figure 3.02
Case Study Map 1. Taos Goji Eco Lodge 2. Krause Berry 3. Willow-Witt Ranch 4. Luna Valley 5. Blackberry (Madsen, 2020)

iii.   **Design Guides**

An analysis of existing projects helped to direct the design to what it should encompass and practice. The design guide portion of the methodology recognized the types of programming the case studies used. These design elements were compiled and organized by their functionality and then applied to the projective designs.

iv.   **Projective Design**

I looked to put the design guides to the test to understand how these designs look spatially. These design ideas projected how to integrate and overlap programming ideas. The design explorations looked at how spatial elements were combined into one design.

v.   **Survey**

A set of 4 separate surveys was designed and sent to individuals of their respective categories (brief research identified potential participants). Each of the 4 surveys asks roughly 8-10 questions specific to the individual's respective category (See Appendix B). The feedback provided an understanding of fundamental ideologies of the topics on sustainability, agriculture, tourism, all within the proximity of the proposed site. The survey was an initial way to collect data to combine the case studies to influence the design guides (See Figure 3.03).
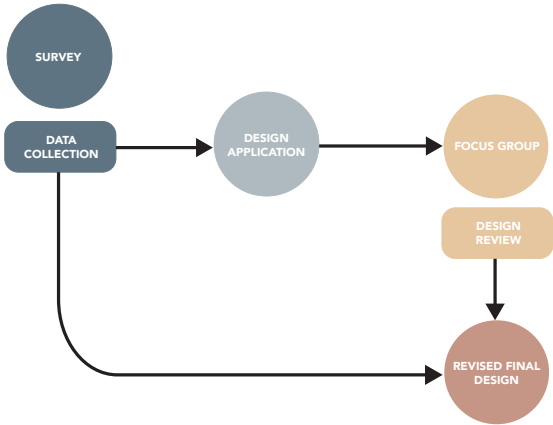
Figure 3.03
Survey and Focus Group Process
(Madsen 2021)

vi.   Design Application

The selected site within Wyandotte County, Kansas, is existing farm land and can show how a traditional farm can be transformed into a multi-functional, sustainable agriculture attraction. The site is 2,762 acres along the Kansas River corridor and is located in a food desert (area of limited accesses to food). The selected farm site offered a variety of opportunities and can inspire further sustainable agritourism design development. I applied elements of the projective designs towards the official design application.

vii.   Metrics

After completing the projective design process and design application, I completed a set of metrics for the design. I assessed the implemented elements and what those could provide within popular metric categories. By taking inspiration from the LAF (Landscape Architecture Foundation) existing metrics guide and tailoring them to a new format I was able to measure sustainable farming and tourism. Each category of community, environment, and economy references the 3 P's of people, planet, and profit to recognize all aspects of design (See Figure 3.04).

Figure 3.04
Metrics Categories Checklist (Madsen 2021)

The design was able to achieve "success" when all of the categories and subcategories were integrated into the design. These metrics, adjusted to meet agriculture and tourism needs, were completed with Wyandotte County demographics in mind. The overall metrics for the design application were measured with the ability to achieve themes within each category and provide for the site and surroundings.

viii.   Focus Group (Review)

Upon completing the survey, the subjects had the opportunity to volunteer to take part in a secondary group interview where they were asked to assess my current design. The focus group process acted as a critique for the strategy and its objectives. There were volunteers from each of the 4 categories willing to participate in the focus group and all volunteers were invited to participate (See Appendix C.)

ix.   Final Design + Metrics

To complete the research and design process, I compiled all the information gathered in these steps to complete my design. I based the final design attempt on the feedback received throughout the previous methodology process. In addition to the final design, I completed a final set of metrics to set a precedent example. Creating a final design with context, I was able to use the real metrics to show the design's potential effects on an existing community.

The final design and metrics show this design's success rate on a scale that can be compared across other projects to see that it meets the community's needs.

x.   Report Organization

The following chapters were organized to address each methodology step (See Figure 3.05).
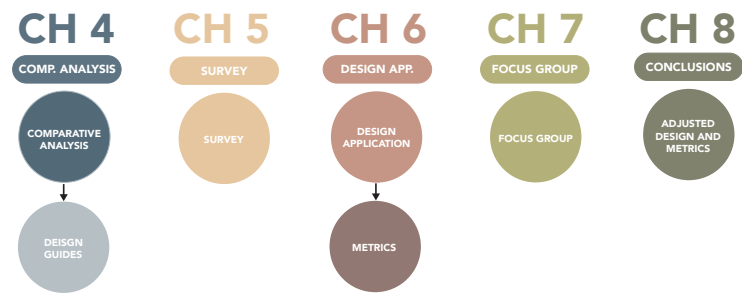
Figure 3.05
Report Organization (Madsen 2021)

4.   COMPARATIVE STUDY

In this chapter, I examine case study information and purpose. I outline particular projects and their contributions as well as spatially analyzing the farms' design and proportions among the common program elements of nature, lodging, tourist, and agriculture spaces.

Understanding such information about a select group of similar projects can help compare the popular elements in sustainable agritourism designs. The compared information also allows the opportunity to create design guidelines. Using both the existing LAF performance metrics combined with elements from each of the case study projects, I customize a design outline specific to the working category of sustainable agritourism.

Design guide findings are explained through text, images and graphics. In the methods to follow and throughout the remainder of this report I reference these design guides as the design guides checklist in working to achieve (or 'check-off') the created guidelines.

Taos Goji Eco Lodge

Nested in San Cristobal, Taos Goji is an organic farm that offers Worldwide Opportunities on Organic Farm volunteers and foodies alike a chance to stay on a homestead dating back to the 1880s (See Figure 4.01).

Figure 4.01
Taos Goji Eco Lodge (Madsen 2021) Adapted from Booking.com. (2018). Taos Goji farm & Eco-lodge Retreat, ARROYO SECO, USA. Retrieved March 02, 2021

Size: 40-acres

Location: El Prado, New Mexico (US)

Year Round: On site lodging creates a year-round draw for visitation.

Agritourism: Passive, Indirect & Direct

Sustainability: The farm is currently working to go completely off the grid in adapting solar energy.

Ag: 69.1%
Tour: 8.22%
Lodge: 10.1%
Nature: 12.5%

Figure 4.02
Taos Goji Eco Lodge Spatial Analysis (Madsen 2020)

i.i **Taos Goji Eco Lodge Summary**

Although the Taos eco-lodge is by far the smallest of the case studies, it still manages to include each of the different typologies of spaces (See Figure 4.02). By centralizing the lodging and tourist programs, the design creates easy access for visitors to each space the farm offers. Bringing visitors to the center of the farm has the opportunity to create an immersive experience, but is there a level of too much immersion. This example shows it is possible to have full immersion without disrupting productivity which is a valuable discovery in maintaining a farming operation (should be considered when designing).

The lodging units are open to the public year round even when the farm is not in production creating year round income for the farming operation. Introducing solar energy to power the lodges makes a sustainable base. In addition, there are educational seminars and tours on-site and comprehensively create an immersive experience.

Krause Berry Farms

Krauseberry has its own bakery and winery. The on-site Harvest Kitchen produces over 100 products. The on-site production led to the expansion of sale for farm made products within Fraser Valley (See Figure 4.03).

Figure 4.03
Krause Berry Farms (Madsen 2021) Adapted from:
Krause Berry Farms. (2020, March 18). Krause Berry Farms.

Size: 200-acres

Location: Fraser Valley - (British Columbia, Canada)

Year Round: The Farm welcomes visitors all year. Year-round visitors can purchase frozen berries, pies and ice cream from the on-site market.

Agritourism: Indirect & Direct

Sustainability: Krause Berry utilizes and outlines many sustainable farming methods. These methods include (IPM) – integrated pest management, Crop rotation, organic manures, plastic coverings, and introducing predator insects.

Ag: 33.34%
Tour: 3%
Lodge: 4.46%
Nature: 59.3%

Figure 4.04
Krause Berry Farms Spatial Analysis (Madsen 2020)

ii.i **Krause Berry Farms Summary**

Krause Berry farms cover each of the program basics and do well to make the different spaces overlap. Agriculture land and tourism spaces merge at the farms' on-site bakery and winery where visitors can buy the product (See Figure 4.04). An on-site market, along with event venues, helps the property generate year round sales.

The farm also offers a Upick experience where the visitors can participate in the process from start to finish and leave with their produce. Practices like wine tasting and Upick's bring visitors and the community closer to the farm to share interest and the potential to invest. Lastly, the farm practices many sustainable farming techniques and has reached out to the community to share some of their farm findings. The entire farm is surrounded by nature to encase the agriculture land, to shelter it from external elements as well as creates a backdrop for an overall more scenic site experience.

Willow-Witt Ranch

The hiking, camping, and ranching experience that offers interactive and immersive farming experiences through farm stay accommodations (See Figure 4.05).

Figure 4.05
Willow-Witt Ranch (Madsen 2021) Adapted from:
Farm Stay. (2019, November 13). Willow Witt RANCH.

Size: 445-acres

Location: Ashland, Oregon (US)

Year Round: Willow-Witt ranch sell produce all year round to bring continuous profit. In addition there are education and school partnerships creating a year-round educational attraction.

Agritourism: Indirect & Direct

Sustainability: Willow-Witt Ranch works to create restoration of a unique ecosystem. The ranch provides education on the values of ecology and of the complex web of food and environment by operating a small certified organic farm and farm stay accommodations.

Ag: 64%
Tour: 15.5%
Lodge: 0%
Nature: 20.5%

Figure 4.06
Willow-Witt Ranch Spatial Analysis (Madsen 2020)

iii.i   **Willow-Witt Ranch Summary**

The Willow-Witt Ranch has the least balanced spatial analysis results of the comparative analysis. The program elements seem to be more fitting of a traditional farm than an agritourism practicing farm with over 60% of its land use dedicated to agriculture (See Figure 4.06). With no lodging available, the year-round ability for income can be lower than the other examples. The ranch has open venue space and tourism attractions that can function at all times of the year. The tourism dedicated space is again centralized to the farm design, helping to create access and immersion. Willow-Witt Ranch also provides the community educational opportunities to understand their local ecology's values and what goes into operating an organic farm within the ecosystem.

The farm is very dependent on its location because of the farmed product. Having location-specific produce can create a unique attraction for visitors from close and far.

Blackberry Farm

Situated in the Great Smokey Mountains where traditional and historic agriculture practices still thrive. Guest can participate in farming activities such as foraging, gardening, tasting tours and cooking classes (See Figure 4.07).

Figure 4.07
Blackberry Farm (Madsen 2021) Adapted from:
Venue Report. (2019, September 05). Blackberry farm: Walland, Tennessee, US

Size: 4200-acres

Location: Walland, Tennessee (US) – Great Smokey Mountains

Year Round: All season booking for events such as weddings and lodging is available and continues to draw visitors on site year-round.

Agritourism: Passive, Indirect & Direct

Sustainability: Adapting old farming methods that produce less emissions in addition to using, buying, and selling local foods to cut on transportation emissions.

Ag: 63.62%
Tour: 4.07%
Lodge: 2.11%
Nature: 30.2%

Figure 4.08
Blackberry Farm Spatial Analysis (Madsen 2020)

iv.i   Blackberry Farm Summary

Blackberry has the least tourist and lodging spaces with a combined land use percentage of only 6.18%. Unlike the other case study selections, the tourist and lodging areas at Blackberry are located outside the agricultural land (See Figure 4.08). Excluding the visitor spaces from the production can lower the risk of disruption for the crops and livestock but makes integrating people into the agriculture process much harder to access.

Blackberry Farms works to be sustainable through adapting ancient farming methods that use less abrasive techniques. In addition, the farm focuses on buying and selling local to cut transportation emissions.

The Blackberry farm has a barrier of nature sheltering one side of the property. Being located in the Smokey Mountains creates a natural and scenic attraction that makes a visually appealing backdrop.

Luna Valley Farm

Luna Valley is a farm that grows organic crops, grazing sheep and cattle on the pasture. The farm also invites people to be involved with community supported programs that rewards them with on site pizza (See Figure 4.10).

Figure 4.10
Luna Valley Farm (Madsen 2021) Adapted from:
Zabel, L. (2019, April 16). Pizza farms, like LUNA Valley farm IN Decorah.

Size: 300-acres

Location: Decorah, Iowa (US)

Year Round: Luna valley offers year-round lodging and event rental space. The farm also has an all-season restaurant that relies on local and on-site produce.

Agritourism: Passive, Indirect & Direct

Sustainability: The farm uses organic produce methods as well as using solar power.

Ag: 32.4%
Tour: 30.8%
Lodge: 11.5%
Nature: 25.3%

Figure 4.11
Luna Valley Farm Spatial Analysis (Madsen 2020)

v.i   **Luna Valley Farm Summary**

Luna Valley is the most evenly balanced project across the various land use categories, with almost equal tourism space as agricultural land (See Figure 4.11). The farm caters to people and creates activities and the ability to produce food on agriculture compliant land. The farm has worked to bring food and people together to create a wholesome experience.

Luna Valley has a very integrated set of programming. By spanning all types of programming across the property, visitors are encouraged to explore and interact with elements throughout the entire site. The farm has a natural barrier to shield the property for privacy and blocking external elements. There are year-round lodging opportunities and open venue space. On site there is a restaurant that specifically relies on local and on-site produce. Luna Valley has also been experimenting with sustainable practices for organic farming and solar power elements to power event spaces and lodges.

Comparative Analysis Summary

After conducting spatial analysis along with recording program element ratios I am able to understand what should be considered to create successful design guides.

Following the case study project's review and data summarization, I had conducted the comparative analysis. Taking the findings from each individual project and comparing the results.

To compare the case study projects across the board I first analyzed each individually and summarized the findings. To further expand and advance upon my findings I compiled the found information into a table where I compared the projects moving down one column to the next (See Table 4.01). The table includes each case study and their comparable information including; project size (in acres), spatial analysis (by percentage), project process (by initiatives), and lastly the project amenities and access (by project implementations and elements). Each column helped to make the comparison of each project simple and clear to the purpose of the comparative analysis which is the creation of design guidelines.

This comparison helped to assess how they were able to function across different sites, with the same program elements. Cross analyzing the results helped create a foundation for guidelines. Although I was not looking for one singular "best" project, I was looking for commonalities. Between the five cases that were compared I was able to draw out the thematic and physical elements each case involved within the design and then worked to expand on them.

After creating the table and comparing the projects across the board I was able to extract main five categories. Each project worked to address an element within these similar topics that could contribute to guiding a new design. The categories that were created roughly address; the community and social needs, potential programming of the site, the ability to access and approach the site, how to involve group initiatives and organizations within the design, and last how to raise funding and manage these types of sites. These categories were created to ensure each design following the guides would address the larger themes such as people, planet and profit (better known as the 3 P's).

	TAOS GOJI ECO LODGE	KRAUSE BERRY FARMS	WILLOW-WITT RANCH	BLACKBERRY FARM	LUNA VALLEY FARM
SITE SIZE	40 Acres	200 Acres	445 Acres	4200 Acres	300 Acres
SPATIAL ANALYSIS	Ag : 69.1% Tour : 8.22% Lodge : 10.1% Nature : 12.5%	Ag : 33.34% Tour : 3% Lodge : 4.46% Nature : 59.3%	Ag : 64% Tour : 15.5% Lodge : 0% Nature : 20.5%	Ag : 63.62% Tour : 4.07% Lodge : 2.11% Nature : 30.2%	Ag : 32.4% Tour : 30.8% Lodge : 11.5% Nature : 25.3%
YEAR ROUND	On site Lodging provided through all seasons	Year round open on-site market with minimal lodging	Year round produce sales and educational attraction	Bookable lodging and event space through all seasons	Lodging, event space, and resturant open all year
AGRI-TOURISM	Passive : Yes Indirect : Yes Direct : Yes	Passive : No Indirect : Yes Direct : Yes	Passive : No Indirect : Yes Direct : Yes	Passive : Yes Indirect : Yes Direct : Yes	Passive : Yes Indirect : Yes Direct : Yes
SUSTAINABILE	Practices : Solar Energy	Practices : IPM - Integrated Pest Management Crop Rotation	Practices : Certified Organic Ecosystem Restoration	Practices : Local food sale to cut transportation emmissions	Practices : Solar Energy Organic Methods

Table 4.01
Comparative Analysis Summary (Madsen 2021)

Design Guides From Comparative Analysis

The next step in this research is guideline development. To create the guidelines, summaries of the precedent comparison and spatial analysis have been adapted and molded into design elements. I have synthesized the design program and distilled them into draft guidelines.

The following guidelines are not set rules. Rather, they are simply meant to inform design decisions when it comes to programming for sustainable agriculture function and tourism involvement. The guidelines are organized into different sections derived from the comparative analysis framework. The sections are Sociability, Uses + Activities, Access, Governance, and Economy.

1.

Sociability

"Sociability," pertains to the involvement of people (visitors and community members) within the agriculture/farmland on site. This section of the design guidelines includes programming to engage the community, create stewardship of the place, educational opportunities, and inclusion of local culture.

1. Create moments of intersection for all types of visitors (overnight stay, one-time visitor, community member). These interactions could help people learn more about the place and enrich their overall experience.

2. Although these guidelines encourage the physical integration of tourists/visitors and agriculture production it is beneficial to have dedicated crop space separate for the social tourist related agriculture land. Positioning the agriculture close for users to observe, but far enough away to main purposeful crop production without disruption.

3. Where possible, draw attention to food production. Bringing recreational paths and public space to the agriculture land can help further engage the community. Be aware of too much integration between people and production, visitors could potentially hinder crop growth through pollution or physical disturbance.

4. Install educational signage to inform users of the new or sustainable practices the farm in adapting. It could also be smart to include local history or connections between the place and the design for users to learn about.

2.

Uses + Activities

"Uses + Activities" pertains to the active purposeful programming for an agritourism site. This section of the guideline includes the day-to-day and special event uses for tourists on an agriculture site.

1. Integration of unique feature such as historic lodging or land art can create more opportunities for photography and attract more users.

2. Work to encourage organized, special events in tourist dedicated spaces on site as it will draw in users and garner public support. Such special events include but are not limited to:
   a. Live entertainment & community socials
   c. Lectures and educational talks
   d. Cooking classes including locally produced ingredients
   e. Happy hours (Winery/Brewery)
   f. Fishing events

3. Provide comfortable and varied seating that can accommodate special events, as well as a myriad of recreational activities.

3.

Accessibility

"Access" pertains to accessibility both visual and physical. This section of the design guidelines includes strategies for access and linkages.

1. Agriculture production should be close to visitor for full immersion of practices and education opportunities.

2. Easy for locals to maintain fresh food access by walking.

3. Site location within an existing farm with a rural community for

support. Additionally, the site should have rural scenery.

4. Create areas inclusive for all levels of ability. (Old and Young)

4.   **Governance**

"Governance" pertains to the management of sustainable agritourism sites. This section of the design guidelines includes ownership, programs and initiatives, who's responsible for the maintenance.

1. Aim to be involved in community supported programs or initiatives. This can be an effective way to garner support and increase awareness of sustainable agritourism practices.

2. Creating and maintaining a popular attraction can boost local job creation.

3. The owner must be able to provide consistent funding for on going maintenance and events the tourism might bring.

4. Allow agritourism events to be open to the public year-round.

5.   **Economy**

"Economy" pertains to the financing of sustainable agritourism sites. This section of the design guidelines includes funding and payment for the sustainable agritourism design.

1. Implementing tourism practices before implementing sustainable practices could bring the money to transition towards climate change safe agriculture practices.

2. Having a local owner to improve local spending and economy.

3. Maximizing the educational and visitor friendly aspects. The design will receive better partnerships and funding from schools or third parties.

4. Marketing on site. Shop area for visitors to purchase product.

viii.   **Design Guidelines Summary + Usage**

These design guidelines can be used as a checklist to compare project designs of a similar typology to the program elements to understand if it covers the basis of the design for "success"(See Table 4.01). In this case, success is not rated, rather by meeting these suggestions from the design guides list the project and design can be proven to result in the desired benefits. In this case we can say these projects function the way they were intended to meaning they were a success and we can help outline the means to reach the same goals for other projects through these determined design guidelines.

In the next step I put these design guidelines to the test. I use the design guides to select my project elements and programming for a real world application to be used as an example.

SOCIABILITY	Create moments of intersection for all types of visitors (overnight stay, one-time visitor, community member).	Position the agriculture close for users to observe, but far enough away to main purposeful crop production without disruption.	Draw attention to food production. Bringing rec. paths and public space to the agriculture land can help further engage the community.	Install educational signage to inform users of the new or sustainable practices the farm in adapting.
ACTIVITIES	Integration of unique feature such as historic lodging or land art can create more opportunities for photography and attract more users.	Encourage organized, special events in tourist dedicated spaces on site as it will garner public support. Events include but are not limited to:	a. Live entertainment c. Educational talks d. Cooking classes (include local produce) e. Happy hours f. Fishing events	Provide comfortable and varied seating that can accommodate special events, as well as a myriad of recreational activities.
ACCESS	Agriculture production should be close to visitor for full immersion of practices and education opportunities.	Easy acess for locals to maintain fresh food access by walking.	The site should be located within an existing farm with a rural community for support. In addition, the site ideally has significant rural scenery.	Create areas inclusive for all levels of ability. (Old and Young)
GOVERNANCE	Involve community supported programs or initiatives. This can increase awareness of sustainable agritourism practices.	Create and maintain a popular attraction. This can boost local job creation.	The owner must be able to provide consistent funding for on going maintenance and events the tourism might bring.	Allow agritourism events to be open to the public year-round.
ECONOMY	Implementing tourism practices before sustainable practices will generate money to transition towards safe agriculture practices.	Having a local owner to improve local spending and economy.	Maximize the education and visitor friendly aspects. The design will receive better partnerships and funding from schools or third parties.	Market on site. Shop or sale area for visitors to purchase product.

Table 4.02
Design Guidelines (Madsen 2021)

5. SURVEY

After completing the design guidelines and knowing what my design should include, I had an idea of where my site could be and who it should involve. This chapter discusses the surveys; who they involve, what each survey was designed to find, how the results were compiled, and how they contribute to the overall research process and design. This step of the research process acts as data collection for the local and site context.

The survey questions were depicted and analyzed through various text, graphics, images, and tables. Each survey is also located in the appendix (See Appendix B).

Survey Purpose

After knowing what my design should include I was able to narrow down my site design's area and tailor the survey questions and selected survey participants (within each category) towards their proximity to the site along with knowledge of their given category.

The purpose of a survey in this methodology process was for data collection, reassurance, and involvement.

Data Collection:

The survey questions explore some of the preconceived notions the category participants had about sustainable and agritourism practices to collect data. The survey also revealed information about the county's current standings with policies and community involvement. Their responses exposed many new findings, especially those of the design users, showing the study area's needs and current conditions.

Reassurance:

The responses also supported information for the claims made about the populations' deprivation of food and the communities' need for unity. Reassurance came from the participants' ability to determine the design implementation's plausibility. Users were able to define how effective the design could be, considering the community's specific factors.

Involvement:

Last, the survey should engage and introduce participants to the project for their own personal benefit. By addressing these sustainable and agritourism-centered topics within the survey, responders reflected on how they contribute positively and negatively to these processes. Providing this time of reflection for existing farmers, I was able to inspire the participants to think about their own ability to be sustainable in light of climate change. The survey also depicts how members of the Wyandotte County community felt about the potential for design implementation and how a sustainable agritourism design could create a positive impact within a rural community.

Survey Categories

The survey questions were divided amongst the categories of people taking them. Questions for policy makers vary from questions being asked of potential design users. Separating the surveys into categories allowed direct answers from "experts" of that specific field.

Policy Makers within the Agriculture Field :

Investigate local (meaning Kansas and Wyandotte County) policymakers to see if the final sustainable agritourism design would be viable, and to see what it would take for the design to be implemented. The interview with policy makers also highlights the barriers farmers experience in producing sustainably, selling food locally, and implementing agritourism into their farms programming.

Agritourism Involved Farmers:

This series of interview questions asks current (close in proximity) Kansan and Wyandotte County agritourism farmers how the element of tourism has benefited them and what the transitioning stage was like. In addition, I share my design and metrics and compare my projected metrics and spatial programming to their existing farm.

Traditional Farmers:

Understand local (meaning Kansas and Wyandotte County) producers to see how willing they are to change their current practices to more sustainable and agritourism centered practices. I ask free response to understand their thoughts on tourist in their farm, to see if they believe they are a disruption or an asset. After sharing my design and projected metrics they can understand the incentives of introducing tourism and multi-function elements to a farming operation. Lastly, I question if they would be willing to adapt similar programming as well as if they believe this design would still function properly.

Potential Design Users:

The Potential user questions assess the design user's response to the project and its programming. The potential user responses could result in a further understanding of the user wants and needs for the site design in addition to their acceptance of the sustainable agritourism park within their community. The users can range from local organizations and community/neighborhood spokesman.
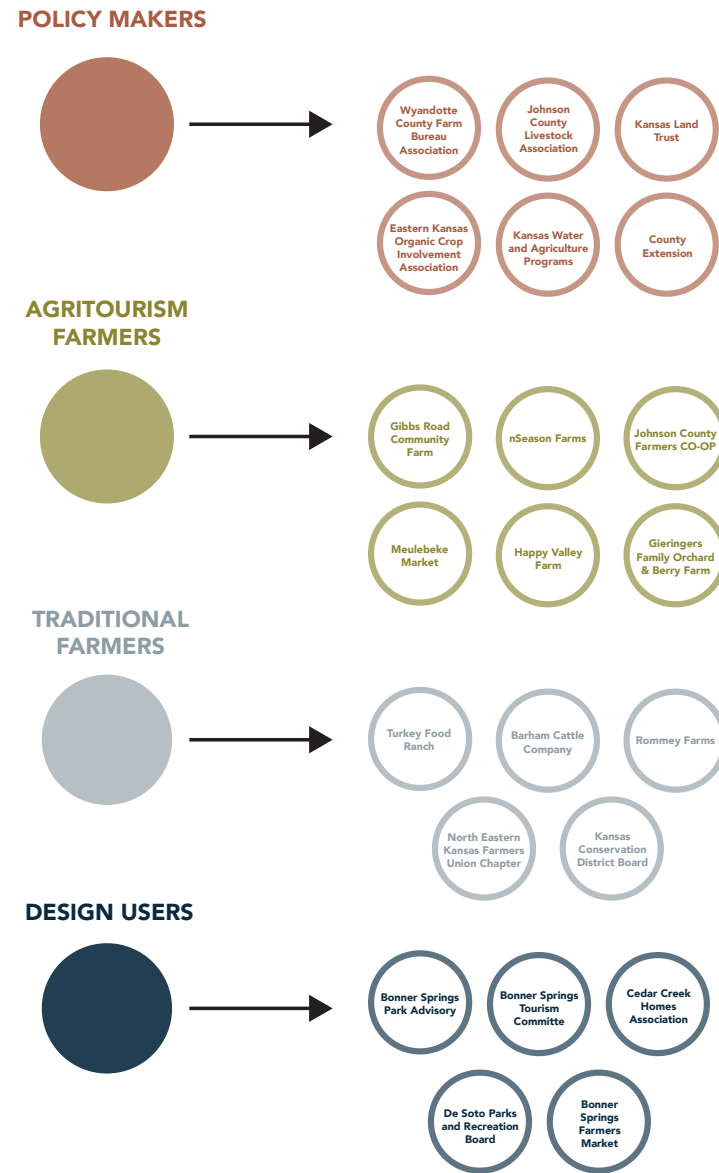
Survey Structure

Survey questions were Yes/No and free response to allow initial thoughts to be answered. Participants could then explain the reasoning behind their selected answers. Each question's responses are summarized and shown based on the percentages of participants who answered alike.

Method:

To start selecting participants I looked through Wyandotte county organizations associated with food involvement. Once I had started to gather a list of potential participants I was able to share their corresponding survey to their category and in addition ask for other potential survey participants. This is often refereed to as the snowball effect or method, where one person leads to another (See Figure 5.00).

Policy Makers within the Agriculture Field :

To find policy makers I looked to the Kansas Farm Bureau Association, the Kansas Land Trust, and the County Livestock Association. I contacted these groups via Facebook and email.

Agritourism Involved Farmers:

I turned to reviews and mentions through local blog pages to start finding agritourism farms. I also looked through Facebook pages to see who followed the local county farmers organizations.

Traditional Farmers:

In finding traditional farmers I was able to use the snowball method of suggestions to find members of Facebook Farm group organizations such as the Kansas Department of Agriculture.

Potential Design Users:

I looked at Local Housing Associations and the Parks and Recreation Associations through Facebook to share the survey.

Limitations:

In hand selecting participants I had a smaller sample which had the potential to skew data responses. Although the sample size was small it was still able to give me the information I need to build upon my design. Each survey had a varied response rate where each number of respondents is represented as n=x to translate into percentages.

SELECTING AND DIVIDING PARTICIPANTS BASED ON EXPERTISE

POLICY MAKERS

Wyandotte County Farm Bureau Association · Johnson County Livestock Association · Kansas Land Trust

Eastern Kansas Organic Crop Involvement Association · Kansas Water and Agriculture Programs · County Extension

AGRITOURISM FARMERS

Gibbs Road Community Farm · nSeason Farms · Johnson County Farmers CO-OP

Meulebeke Market · Happy Valley Farm · Gieringers Family Orchard & Berry Farm

TRADITIONAL FARMERS

Turkey Food Ranch · Barham Cattle Company · Rommey Farms

North Eastern Kansas Farmers Union Chapter · Kansas Conservation District Board

DESIGN USERS

Bonner Springs Park Advisory · Bonner Springs Tourism Committe · Cedar Creek Homes Association

De Soto Parks and Recreation Board · Bonner Springs Farmers Market

Figure 5.00
Survey Participant Selection Process (Madsen 2021)

iv.   **Wyandotte County Agriculture Policy Makers Survey Questions**

8 Total Responses = n
This survey was sent to the agriculture and tourism policy makers of Wyandotte county. The questions were Yes/No and open response. Free responses were summarized and common threads were represented in graphs. Overlapping ideas per one response makes >100% possible.

1.   How are you involved in the food system and how long have you been involved?

The majority of responders were involved with policy making through state and county organizations (See Figure 5.01). Every respondent had been in their position for more than 15 years.
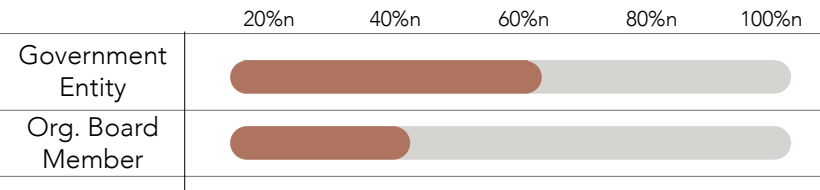

Figure 5.01
Policy Makers Survey Response Question #1 (Madsen 2021)

2.   What is your definition of sustainable agriculture and its practices?

Many answers mentioned long term overall health and careful nature for man-kind, animals, and earth itself. (See Figure 5.02)
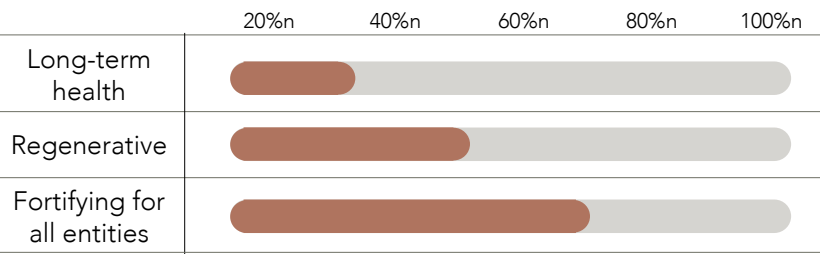

Figure 5.02
Policy Makers Survey Response Question #2 (Madsen 2021)

3.   What are barriers for farmers/ranchers in implementing sustainable practices?

An overwhelming amount of respondents mention cost being a main barrier for switching to sustainable practices (See Figure 5.03). Many responders also felt that attitude and behavior towards the switch was a barrier for farmers. Last, lack of information was also contributing to the barriers as well.
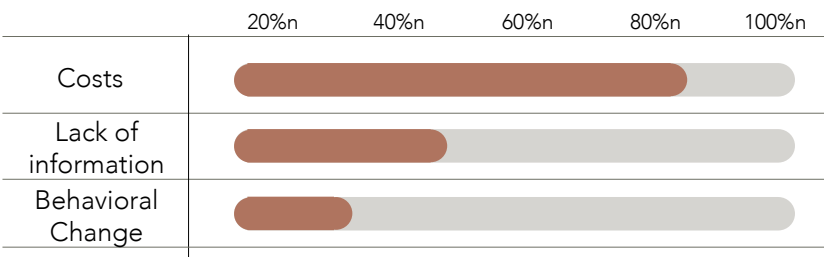

Figure 5.03
Policy Makers Survey Response Question #3 (Madsen 2021)

4.   Are there current policies that encourage or discourage the adoption of sustainable farming practices? If yes, what are the policies?

Every survey participant was aware of current policies that affect farmers abilities to implement sustainable practices (See Figure 5.04).

Figure 5.04
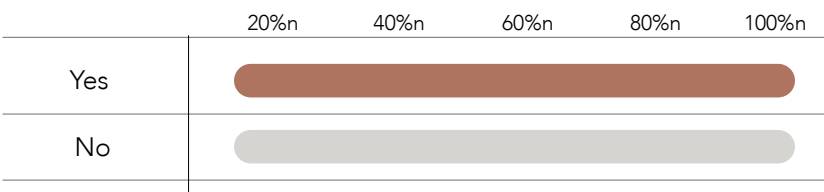Policy Makers Survey Response Question #4 (Madsen 2021)

The responses mentioned a number of policies but the majority that were listed were policies against traditional farming methods such as state fees on fertilizers. The issues that were highlighted were the lack of policies addressing incentives for the sustainable switch as well as lack of accountability for farmers causing irreversible damage to land.

5. Are you familiar with CSA (Community Supported Agriculture)? Y/N. If so, what is your opinion on its programs?

All participants were familiar with CSA operations (See Figure 5.05). Most responses mentioned the positive effects CSA's can have.
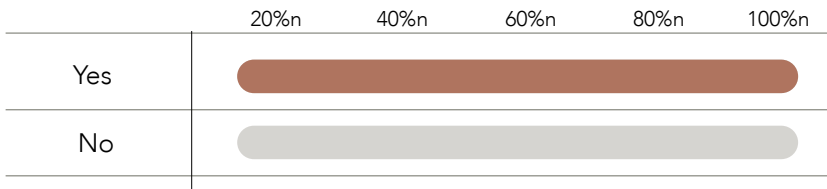

Figure 5.05
Policy Makers Survey Response Question #5 (Madsen 2021)

6. Are there issues or difficulties when working with the community in the field of agriculture? Y/N. If yes, please specify?

The majority of responders were involved with the food making policy side through organizations around the community (See Figure 5.06).
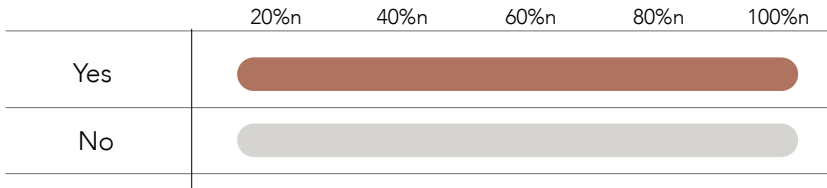

Figure 5.06
Policy Makers Survey Response Question #6 (Madsen 2021)
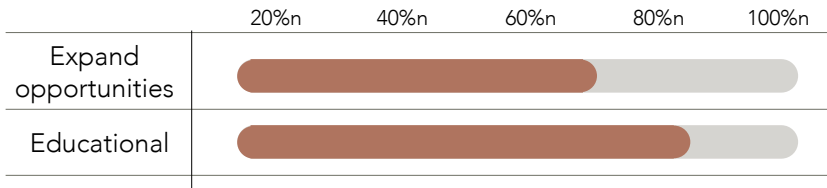
7. What is your opinion on agritourism practices?

Figure 5.07
Policy Makers Survey Response Question #7 (Madsen 2021)

Many answers had the same positive ideas surrounding the opportunities agritourism provides including education (See Figure 5.07).

8. What are the barriers for farmers/ranchers in implementing agritourism practices?

There was a variety of responses but many had mentioned lack of resources being a common barrier for agritourism (See Figure 5.08).
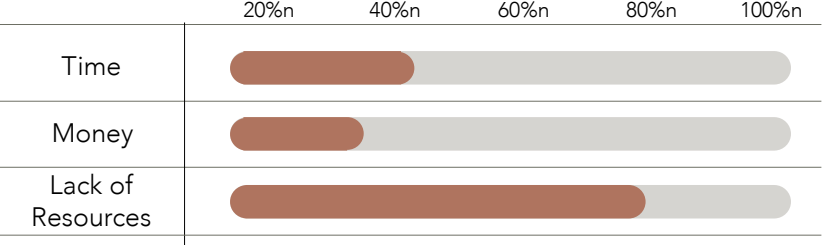
Figure 5.08
Policy Makers Survey Response Question #8 (Madsen 2021)

9. What do you feel the community has in place or should have in place to promote sustainable agritourism development?

The policy maker responses were generally focused around involving the community and local organizations for promotion (See Figure 5.09).
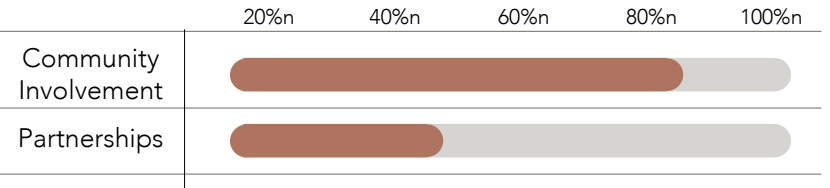
Figure 5.09
Policy Makers Survey Response Question #9 (Madsen 2021)

Other responses mentioned partnerships with surrounding schools and food shelter programs. These pairings can help raise awareness and educate kids along with the community about their food system.

Agritourism Involved Kansas Farmers Survey Questions

7 Total Responses = n
This survey was sent to the agritourism involved farmers of Kansas. The questions were Yes/No and open response. The free responses were summarized and common threads were represented in graphs. Overlapping ideas per one response makes >100% possible.

1. What type of farm/ranch do you operate and how long have you been involved?

Many agritourism farmers that participated claimed to operate an organic orchard, with fewer respondents claiming to operate a ranch or row crop farm with agritourism practices (See Figure 5.10).
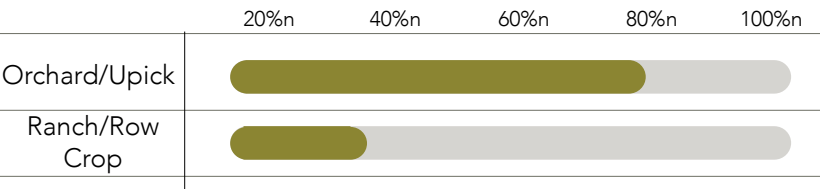

Figure 5.10
Agritourism Farmer Survey Response Question #1
(Madsen 2021)

2. What is your definition of sustainable agriculture and its practices?

Many responses included conservation and stewardship of natural resources as components of sustainability (See Figure 5.11).
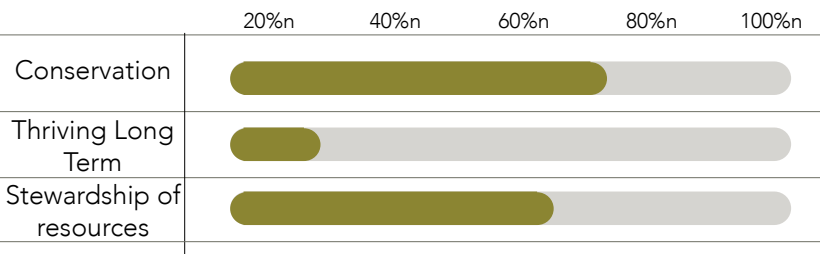
Figure 5.11
Agritourism Farmer Survey Response Question #2
(Madsen 2021)

3. How or what do you do to improve environmental sustainability, social sustainability, and economic sustainability?

Almost each responses included the community as a way they achieve and improve sustainability. As farmers provide food to the people they constantly are working towards social sustainability. Many responses also mentioned accountability and transparency as part of their contribution. Being honest and true about their process seemed to play a role in their sustainable practice (See Figure 5.12).
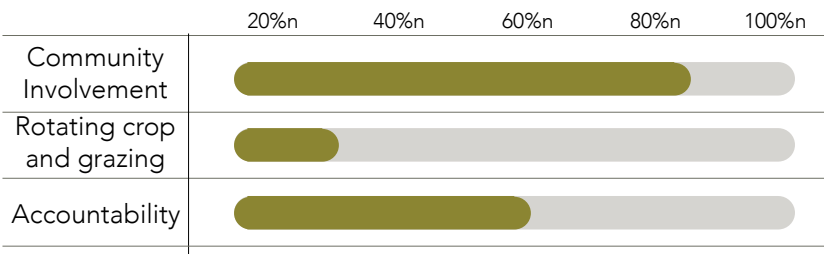
Figure 5.12
Agritourism Farmer Survey Response Question #3
(Madsen 2021)

4. What are barriers for farmers/ranchers in implementing the sustainable practices?

Many responses include cost as a major barrier, keep in mind this category has been more involved with making this change (See Figure 5.13). Other comments were about knowledge and government policy/regulations creating a hindrance on the ability to switch.

Figure 5.13
Agritourism Farmer Survey Response Question #4
(Madsen 2021)

5. How do you market your products and where do you sell them? How is the price determined?

Price seems to mainly be based on past year expenses and comparison to competitors and what markets are asking for (See Figure 5.14).

	20%n	40%n	60%n	80%n	100%n
On-site sale					
Markets					

Figure 5.14
Agritourism Farmer Survey Response Question #5
(Madsen 2021)

6. Are you familiar with CSA (Community Supported Agriculture)? Y/N. Are there difficulties working with the community in ag? Please explain.

There was a percentage of respondents who were not aware of CSA's. Most had good perceptions of the practice (See Figure 5.15).

	20%n	40%n	60%n	80%n	100%n
Yes					
No					

Figure 5.15
Agritourism Farmer Survey Response Question #6
(Madsen 2021)

7. What is your opinion on agritourism practices? Do you believe there are benefits of visitors on the farm? Do you believe there are barriers?

	20%n	40%n	60%n	80%n	100%n
Yes Barriers					
No Barriers					

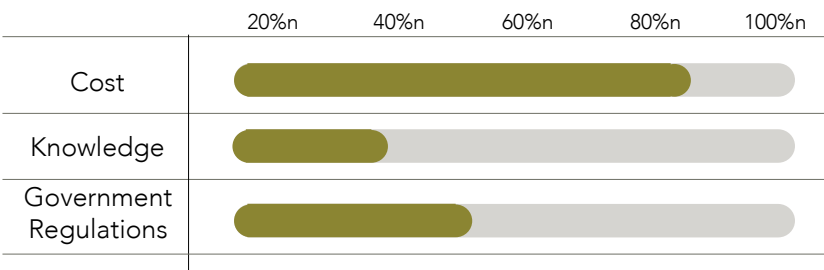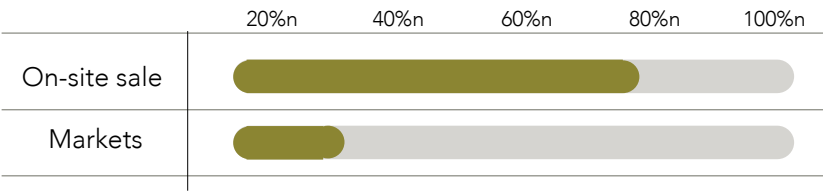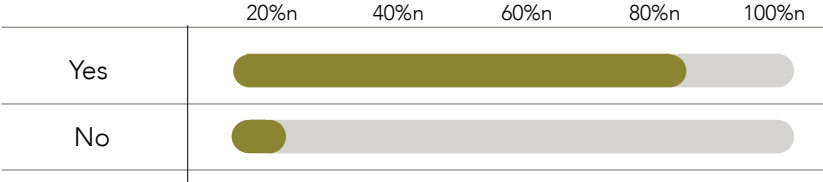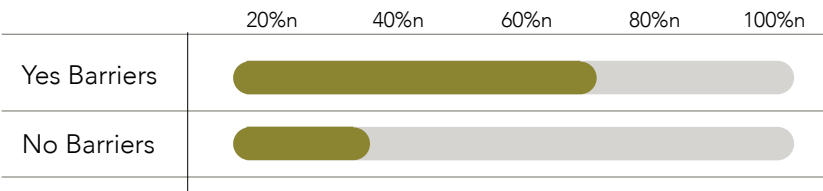Figure 5.16
Agritourism Farmer Survey Response Question #7
(Madsen 2021)

There was more divide across responses of this question with the agritourism farmers than in any other categories (See Figure 5.16). Most believed there were barriers but it was worth it for the positive impact.

8. What do you feel the community has in place or should have in place to promote sustainable agritourism development?

Many felt that exposure was most needed to help the development of sustainable agritourism along with policies and partnerships (See Figure 5.17).

	20%n	40%n	60%n	80%n	100%n
Federal Farm Bill (Protect)					
Partnerships with Schools					
Exposure					
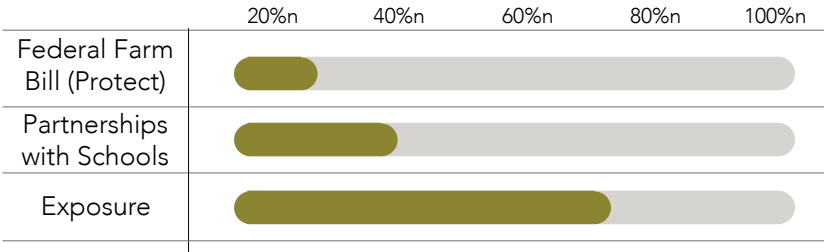
Figure 5.17
Agritourism Farmer Survey Response Question #8
(Madsen 2021)

9. Do you believe transitioning from traditional farming to agritourism farming could generate the needed money for farmers to switch to more sustainable practices? Y/N. Please Explain.

	20%n	40%n	60%n	80%n	100%n
Yes					
No					
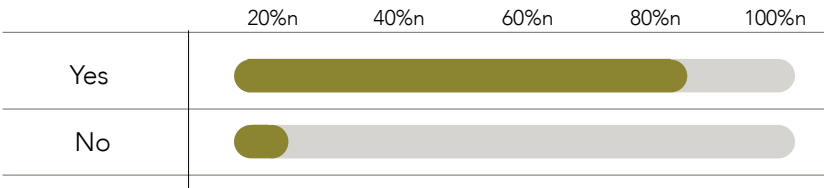
Figure 5.18
Agritourism Farmer Survey Response Question #9
(Madsen 2020)

Most responses consisted of positive comments that supported the idea of agritourism influencing and supporting a sustainable change (See Figure 5.18). A few responders felt that it was a good idea but wasn't as plausible or easy to achieve as the others. Other comments addressed agritourisms potential to do things beyond economically support sustainability but were only suggestions.

Traditional Kansas Farmers Survey Questions

7 Total Responses = n
This survey was sent to the Traditional farmers of Kansas. The questions were Yes/No and open response. The free responses were summarized and common threads were represented in graphs. Overlapping ideas per one response makes >100% possible.

1.   What type of farm/ranch do you operate and how long have you been involved? Open Response.

Traditional farmers claimed to operate various types of farms including specialty operations, orchards, homesteads, ranches, row crops, and cattle forages (See Figure 5.19).
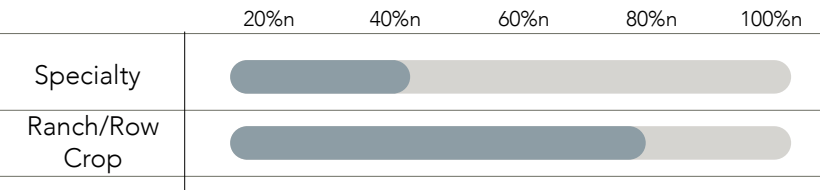
Figure 5.19
Traditional Farmer Survey Response Question #1
(Madsen 2021)

2.   What is your definition of sustainable agriculture and its practices?

Many responders had similar ideas about sustainability, understanding resilience, productivity, and social support for all (See Figure 5.20).
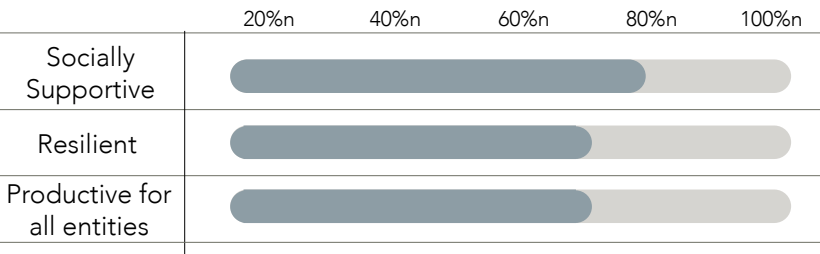
Figure 5.20
Traditional Farmer Survey Response Question #2
(Madsen 2021)

3.   How or what do you do to improve environmental sustainability, social sustainability, and economic sustainability?

The traditional farmers responses consisted of direct practices to be implemented as well as their ability to provide for their community (See Figure 5.21). An additional common response that was unexpected was their efforts to understand other cultures of both environments and people. This response surprised me in the fact that this practice was contributing to sustainability which was not an obvious connection.
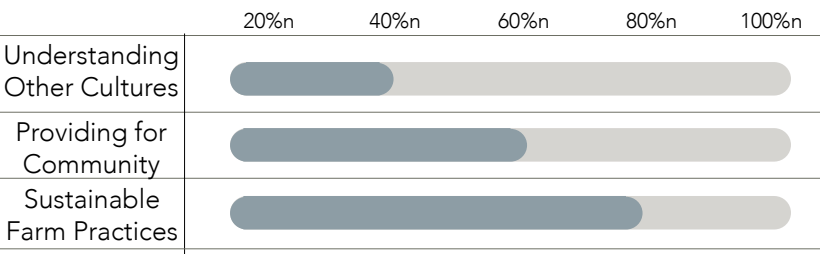
Figure 5.21
Traditional Farmer Survey Response Question #3
(Madsen 2021)

4.   What are barriers for farmers/ranchers in implementing the sustainable practices?

This response was the most shocking of all. All participants stated at one point that a main barrier for implementing sustainable practices was a lack knowledge (See Figure 5.22). Other comments consisted of little to no incentives for switching and a lack of time to change.
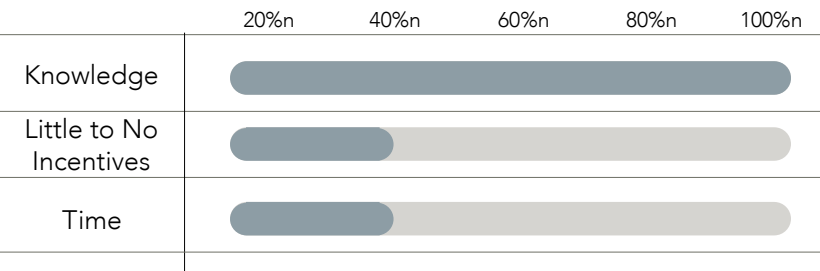
Figure 5.22
Traditional Farmer Survey Response Question #4
(Madsen 2021)

5. How do you market your products and where do you sell them? How is the price determined?

Responses were scattered, on site and market sale were common along with on-line promotion (See Figure 5.23). Prices were predetermined.

	20%n	40%n	60%n	80%n	100%n
On-site sale					
Markets/ Online Markets					

Figure 5.23
Traditional Farmer Survey Response Question #5
(Madsen 2021)

6. Are you familiar with CSA (Community Supported Agriculture)? Y/N. Are there difficulties working with the community in ag? Please explain.

Many said, CSA's help smaller producers get produce to consumers, but can have issues with time and laborer availability (See Figure 5.24).

	20%n	40%n	60%n	80%n	100%n
Yes					
No					
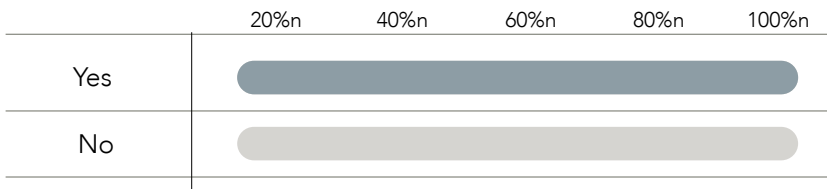
Figure 5.24
Traditional Farmer Survey Response Question #6
(Madsen 2021)

7. What is your opinion on agritourism practices? Do you believe there are benefits of visitors on the farm? Do you believe there are barriers?

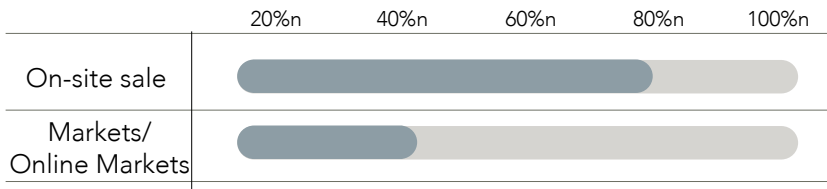|	20%n	40%n	60%n	80%n	100%n
Yes Barriers					
No Barriers					
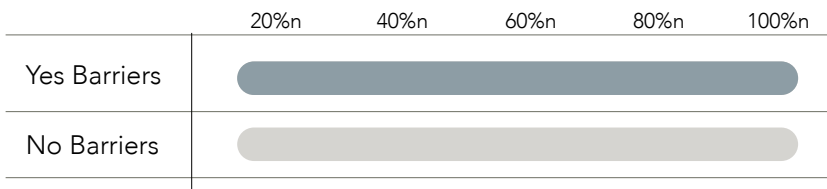
Figure 5.25
Traditional Farmer Survey Response Question #7
(Madsen 2021)

Every participant agreed in that there are barrier to implementing agritourism practices (See Figure 5.25). Many explained that they are good way to educate but can be hard with a lack of space and time.

8. What do you feel the community has in place or should have in place to promote sustainable agritourism development?

Again responses consisted of incentives and reliance on the community for promotion/development in sustainable agritourism (See Figure 5.26). In contrast, these respondents brought up social media involvement.

	20%n	40%n	60%n	80%n	100%n
Incentives					
Social Media Promotion					
Accepting Community					
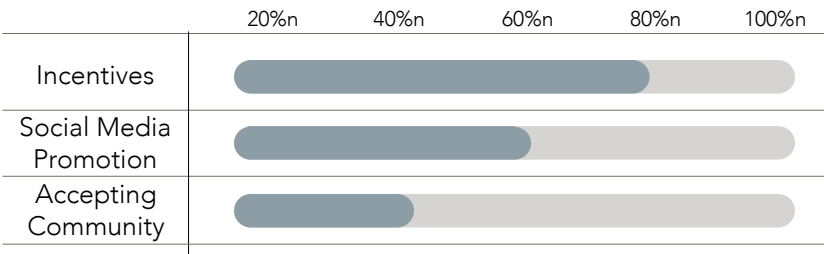
Figure 5.26
Traditional Farmer Survey Response Question #8
(Madsen 2021)

9. Do you believe inviting visitors to agriculture land could be disruptive or counterproductive? Y/N. Please Explain.

	20%n	40%n	60%n	80%n	100%n
Yes					
No					
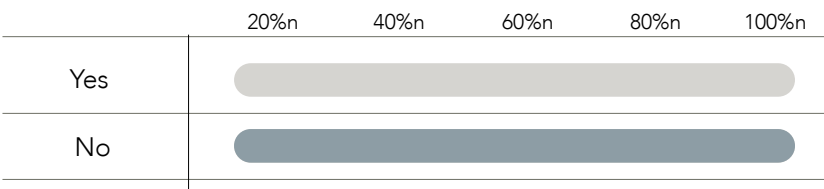
Figure 5.27
Traditional Farmer Survey Response Question #9
(Madsen 2021)

Another unforeseen response in that every participant agreed visitors would not be disruptive (See Figure 5.27). Comments included mention of educating and involving the community being a benefit outweighing the potential harm they could do. Responses did acknowledged that there should be spaces for visitors and spaces to keep separate that could reduce possible disruption.

Sustainable Agritourism Park Design Users Survey Questions

6 Total Responses = n
This survey was sent to the Potential Design Users of Wyandotte County. The questions were Yes/No and open response. The free responses were summarized and common threads were represented in graphs. Overlapping ideas per one response makes >100% possible.

1. Do you actively support local Wyandotte County farms through community supported agriculture groups? Y/N. Please Explain.

Some respondents were unaware of their community agriculture groups (See Figure 5.28). Other responses did show they were getting involved.
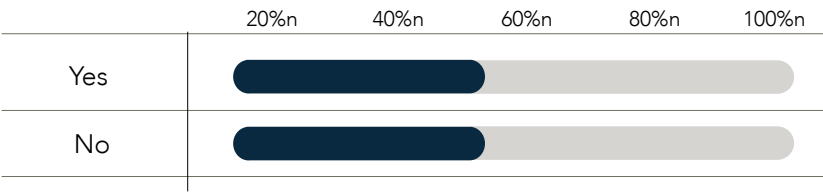
Figure 5.28
Design User Survey Response Question #1 (Madsen 2021)

2. Is locally produced food easily accessible within your neighborhood?

Many respondents were unsure of their food systems accessibility or believed it was generally accessible (See Figure 5.29).
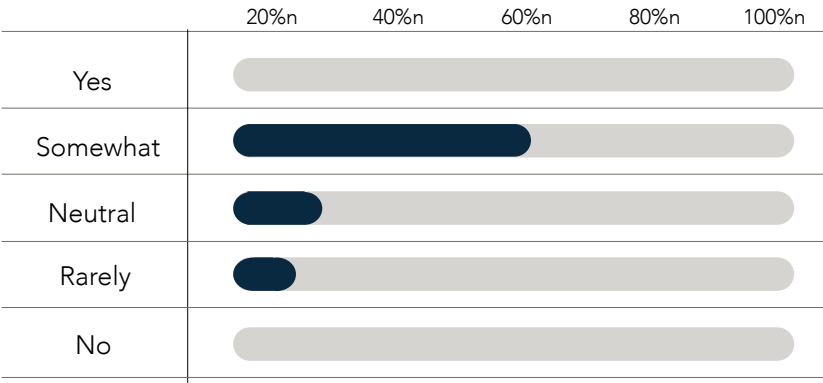
Figure 5.29
Design User Survey Response Question #2 (Madsen 2021)

3. Do you actively support Wyandotte county tourism by visiting local attractions? Y/N. Please Explain.

There was also a lack of tourism support across the community (See Figure 5.30). The comments mentioned this was not on purpose.
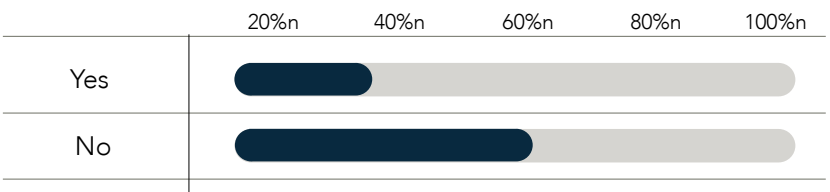
Figure 5.30
Design User Survey Response Question #3 (Madsen 2021)

4. If you had an agriculture park located within your community, would you visit regularly? Y/N.

Potential Users felt the design would be fun and educational for all ages (See Figure 5.31).
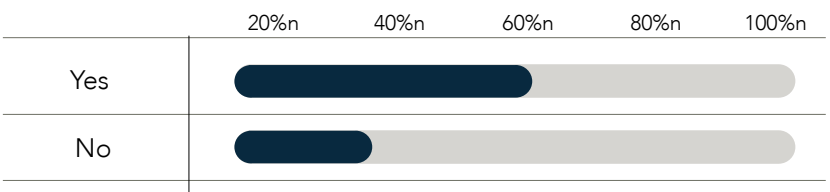
Figure 5.31
Design User Survey Response Question #4 (Madsen 2021)

5. Would you be more inclined to buy local produce if you could visit and see how it is produced? Y/N.
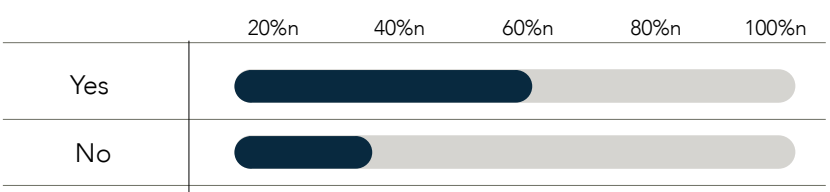
Figure 5.32
Design User Survey Response Question #5 (Madsen 2021)

Surprisingly there were some respondents that were not interested in learning about food production. (See Figure 5.32). Mostly responses were supportive and willing to visit.

6. How do you think a sustainable agritourism park would affect the community?

Although other questions lacked enthusiasm these responses were both positive and supportive (See Figure 5.33). The responses included the potential for involvement and change in food desert conditions.
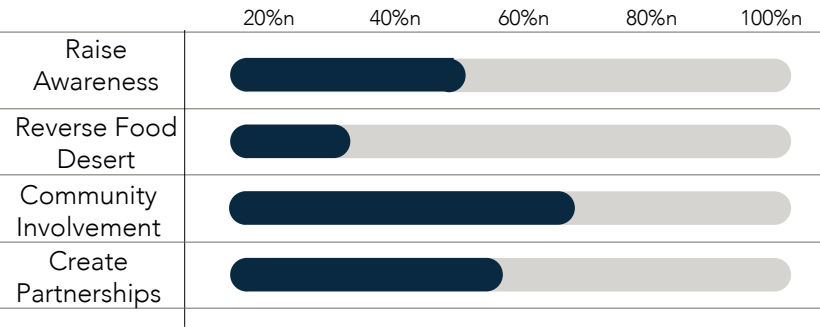
Figure 5.33
Design User Survey Response Question #6 (Madsen 2021)

7. Are there currently any agriculture support programs within Wyandotte County? Y/N/Unsure. If yes, are you/have you been involved?

All responses stated they were unsure of any existing programs and have not been involved (See Figure 5.34).
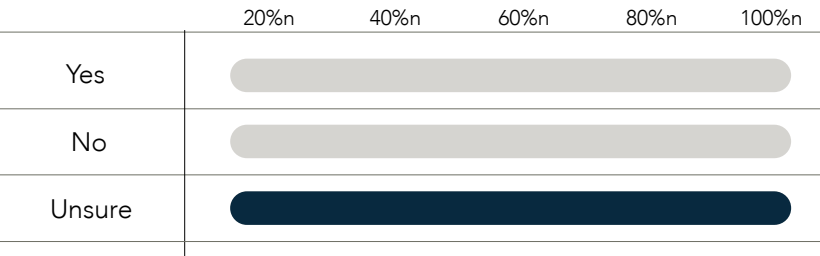
Figure 5.34
Design User Survey Response Question #7 (Madsen 2021)

Survey Results + Summary + Takeaways
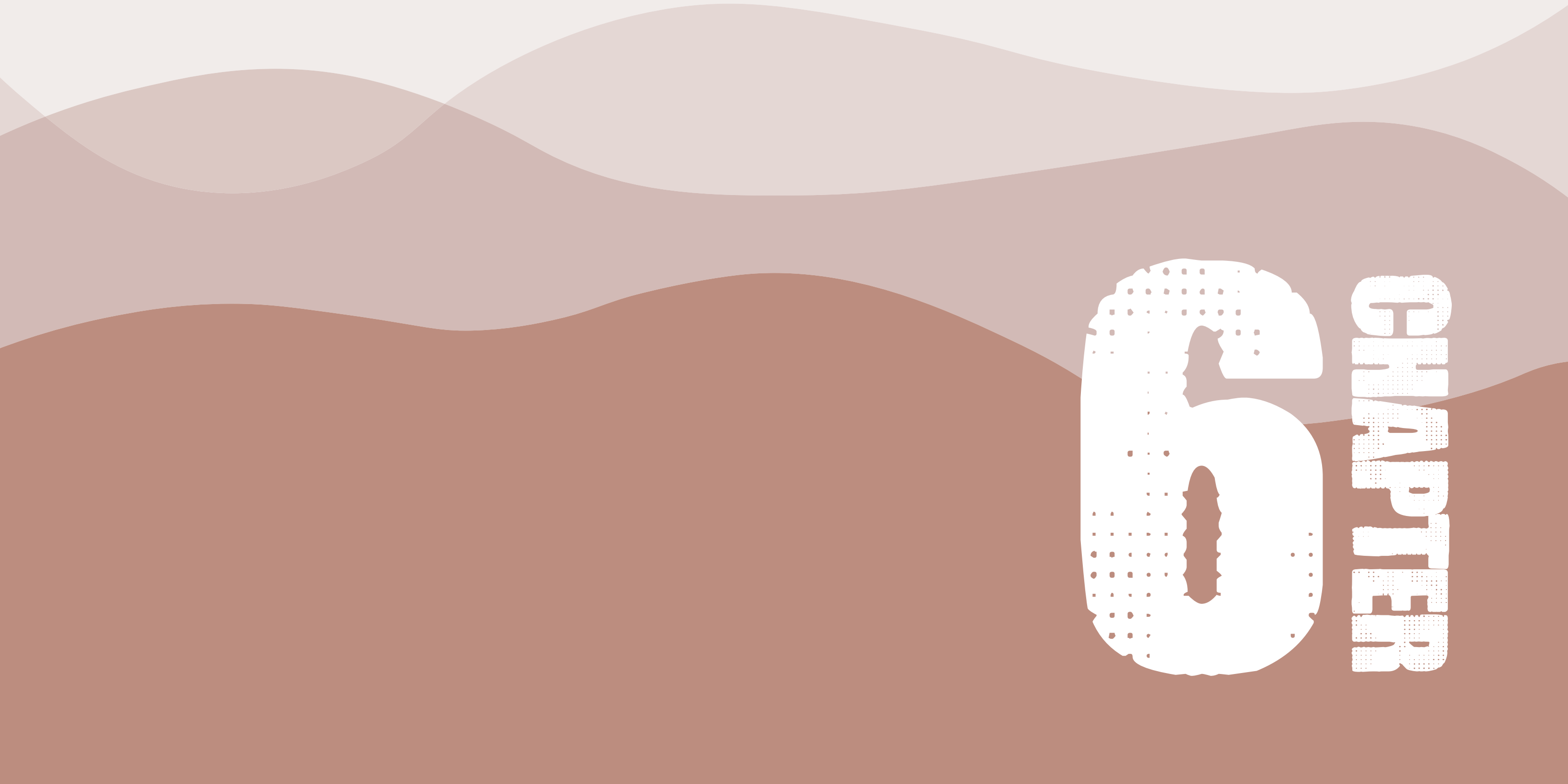
After analyzing each of the surveys, I was able to draw many conclusions. Each survey showed the level of support those individuals had for agritourism or sustainable farming processes.

The policymakers were able to provide the current farming standards and speak to the potential governing/policy issues that create farmers' barriers. Agritourism Farmers gave insight into the struggle of transitioning from a traditional farm to an agritourism-centered practice. The traditional farmers shared their hesitations to making the sustainable/agritourism switch and the factors that limit them. While the community involved survey reinforced, the communities need for a design implementation that brings unity, local food, and public space.

Although separately the surveys spoke volumes, together they created and outlined even more of a story. After cross-analyzing the four survey categories, I was able to draw further conclusions. One of the major takeaways was a comparison between agritourism and traditional farmers. When asked about the barriers to sustainable practices, agritourism farmers' responses revolved around cost, while every traditional farmers' response dealt with the lack of knowledge. These results were the most shocking and most telling of the issues behind sustainability implementation.

Overall, the surveys became a significant way to support my initial data of the practices and the site's context and provided new and unconsidered data. It brought relevance to things that only the community and farmer/policy involved members could contribute with their particular knowledge of the site, policies, or practices. The information collected contributed to raising awareness to the issues involved with transitioning towards a sustainable agritourism practice. Addressing these barriers within my design allowed for a relevant project that can work as an example for other farmers looking to make change.

The last question of each survey prefaced a volunteer for future involvement. The question asked participants of their interest in a focus group that would act as a design review for the design application process. This information will be reviewed in the report's focus group section (starting on page 140).

6.   DESIGN APPLICATION

In this chapter, I explore the design opportunities following the information gathering (from the survey and comparative analysis) and design preparation steps. This design work provided a site and context to put my design guidelines to the test. Specifically, this design looks at a Wyandotte County site in Kansas. The site consists of 2,762 acres spanning the Kansas River. Resulting from this initial design study, we can see how my projective design ideas pan out with real-world application. Lastly, metrics were developed to understand the design's success potential.

The design project was portrayed through a series of text, images, maps and graphics.

i.   **Design**

The design is an example, to show a traditional farm transformed into a multi-function sustainable agriculture attraction. The projective elements create the design, and metrics assess its implications.

ii.   **Purpose + Goals**

The purpose of this research informs current farmers of the potential multi-purpose functions of farms that not only contribute to decarbonization but also offer ways to implement agritourism that generate additional income to help influence the farmers ability to switch to other sustainable practices. The goals of my research and design were:

1. Produce design programming that follows the guidelines for "success".
2. Spatially express how sustainable agriculture and agritourism practices can merge into a highly beneficial farming operation.
3. Generate metrics for the applied design to understand the potential economic, environmental, and social benefits.

iii.   **Site Analysis**

In the first step of selecting my site, I researched the various locations within the site boundaries of Kansas City, Kansas and Eudora Kansas for the particular attributes my site needed. A main attribute was ability to house crops with good soil quality and a community in need of local food systems (See Figure 6.01).
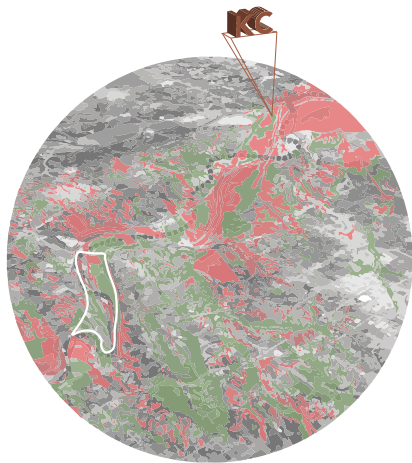
Figure 6.01
Agriculture Soil Conditions (Madsen 2021)
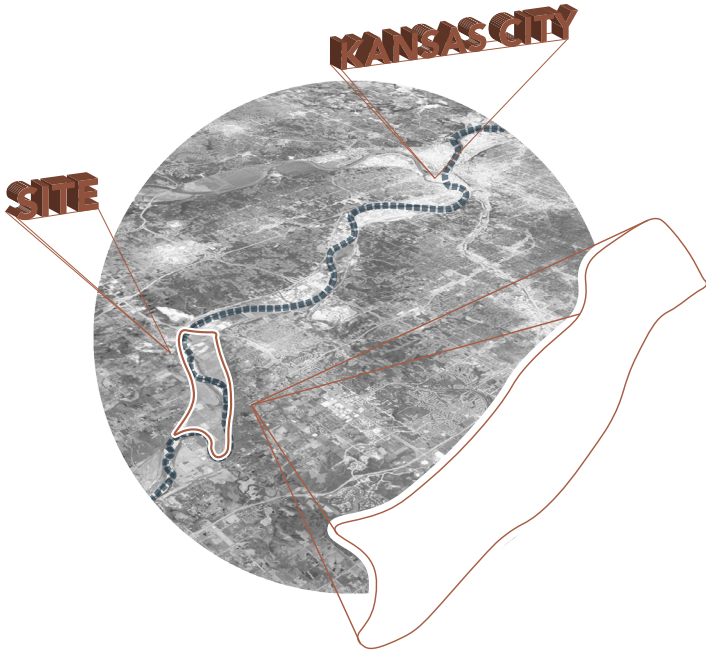
Figure 6.02
Site Location Map (Madsen 2020)

iv.   **Site Selection**

A selected site in Wyandotte County, Kansas (See Figure 6.02) consists of existing farm land and can become an example showing how a traditional farm can be transformed into a multi-functional sustainable agriculture attraction. In addition the site can be used to re-define the meaning of sustainability. The design can also become an attraction working to bring the people of Kansas City out to rural areas (ex-urban tourism) to raise awareness for where their food comes from.

The site is 2,762 acres along the Kansas river corridor. The site is located in a food desert connecting Bonner Springs and De Soto, the site is also in close proximity to a camping attraction called Lake of the Forest. In combination with the site soil conditions analysis, the selected area will create adequate agriculture land for crop production. Specifically crops like corn/sorghum are resilient in both dry or flooded conditions. Being located along the river can create flood risk which for some crops is not detrimental to their growth and nutrient abilities.

Design Pillars

As the project is focused around more broadly defining sustainability, I believe the key to achieving sustainability will be in meeting the economic, social, and environmental needs of the community. In reaching sustainability under all three categories the design must include elements to increase economic gain through both job creation and tourist attraction. The design must address social justice, include aspects to involve the community, and improve their support of agriculture. Lastly the designs sustainability must include environmentally friendly factors of new and inventive farming techniques and education of agriculture and climate change to the surrounding communities and visitors. In addition these goals reflect the pillars of the Green New Deal. Each pillar works to provide elements to support a well rounded community or as I am redefining complete sustainability.

Economy

Creating jobs due to a need of more farmers and producers. Agritourism can not only benefit visitors but generate more income for experimenting with sustainable practices. An agritourism attraction will make local food more desirable and create a local market system (See Figure 6.03).

Social

Providing an attraction to the county and surroundings cities including Kansas City. Drawing people out of the city and into the rural areas (ex-urban migration/tourism) can create a community identity and raise local awareness of food systems. Although the design cannot address all of the social issues it will work to bring food to areas in need, establish community/agriculture relationships, and increase local support systems (See Figure 6.04).

Environment

Current (or traditional) practices could be altered to work more productively and sustainability. Educating the visitors and local community about agriculture can increase awareness of local food production as well as raise climate change awareness and how we can combat it. Lastly implementing local food sharing systems for people to access local food can cut food transportation needs and emissions (See Figure 6.05).
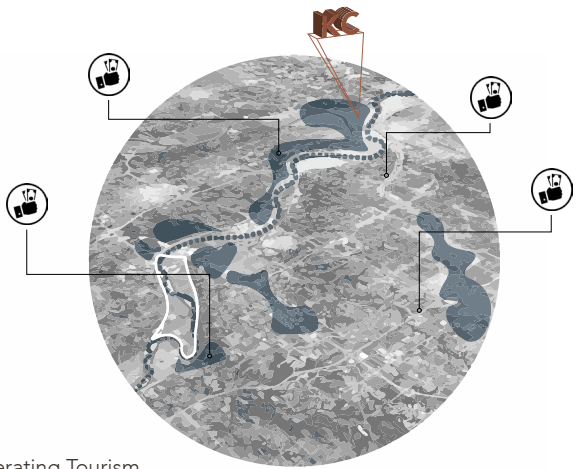
Figure 6.03
Economy Generating Tourism
(Madsen 2021)
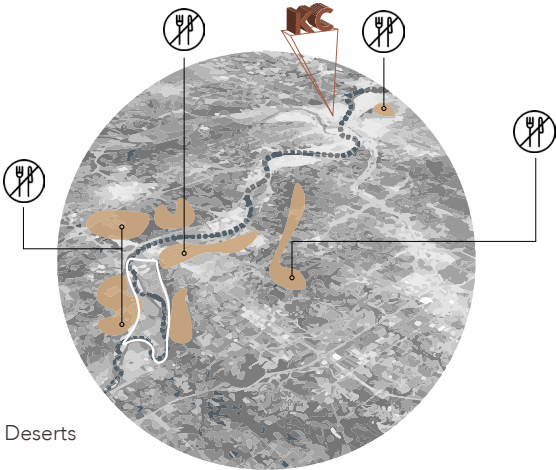
Figure 6.04
Community Food Deserts
(Madsen 2021)
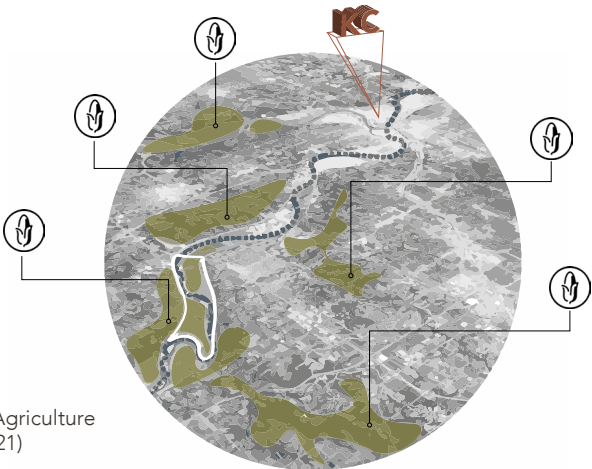
Figure 6.05
Traditional Agriculture
(Madsen 2021)

Addressing the Design Guides

After spatially organizing the design guide programs, the initial design needed to meet the guideline requirements. Each guide category was tested through a series of diagramming. **These diagrams look to see where programming elements could be placed within the site.**

Activities

The activities section of the design guidelines includes the integration of people and spaces. These measures ensure that visitors will always have something to do or something to see on site. The projected site design includes areas dedicated to views, public gathering spaces, and accommodation (See Figure 6.06).

Integration

Bringing unique features such as historic elements and iconic views to attract visitors.

Event Space

Encouraging spaces for hosting events and guiding agritourism programming.

Seating

Providing comforting elements to accommodate the various uses for the public spaces.
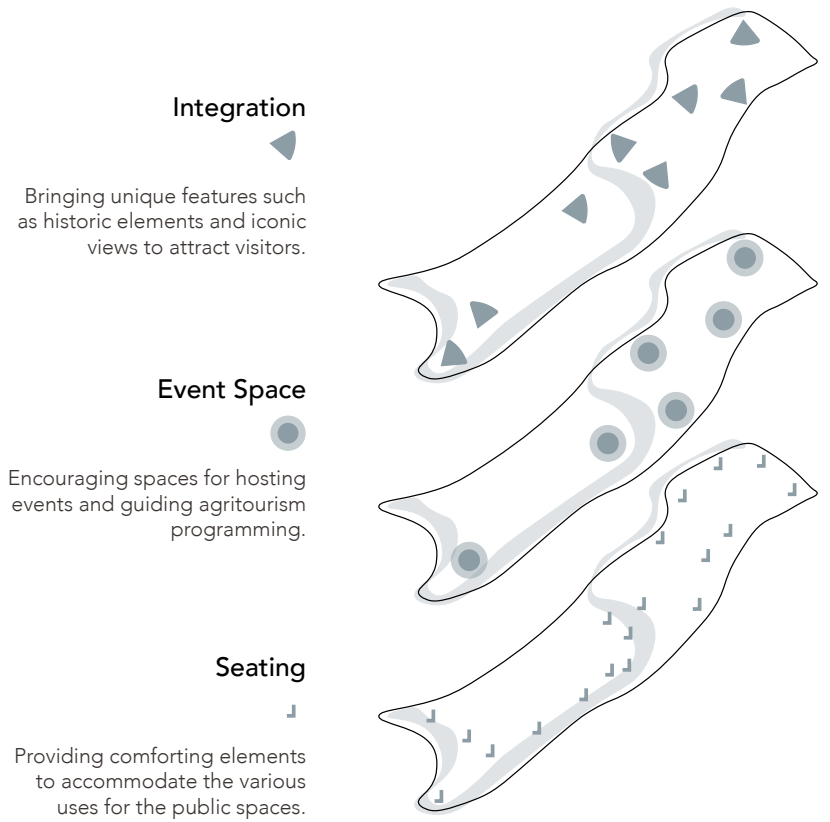
Figure 6.06
Design Guide Activities (Madsen 2021)

Sociability

In addressing sociability, I created moments for intersections. Creating cross-overs between various people and various spaces helps to welcome the community to the farm. The design includes areas to educate visitors, choose your own path, observe agriculture, and interact with others and nature (See Figure 6.07).

Engage

Draw attention to the food production aspects working to engage the community.

Observe

Creating linkages betweens spaces that should overlap occasionally.

Educate

Installing educational signage to direct and inform visitors.

Intersect

Welcoming and non disruptive. Community and event space with views but not fully
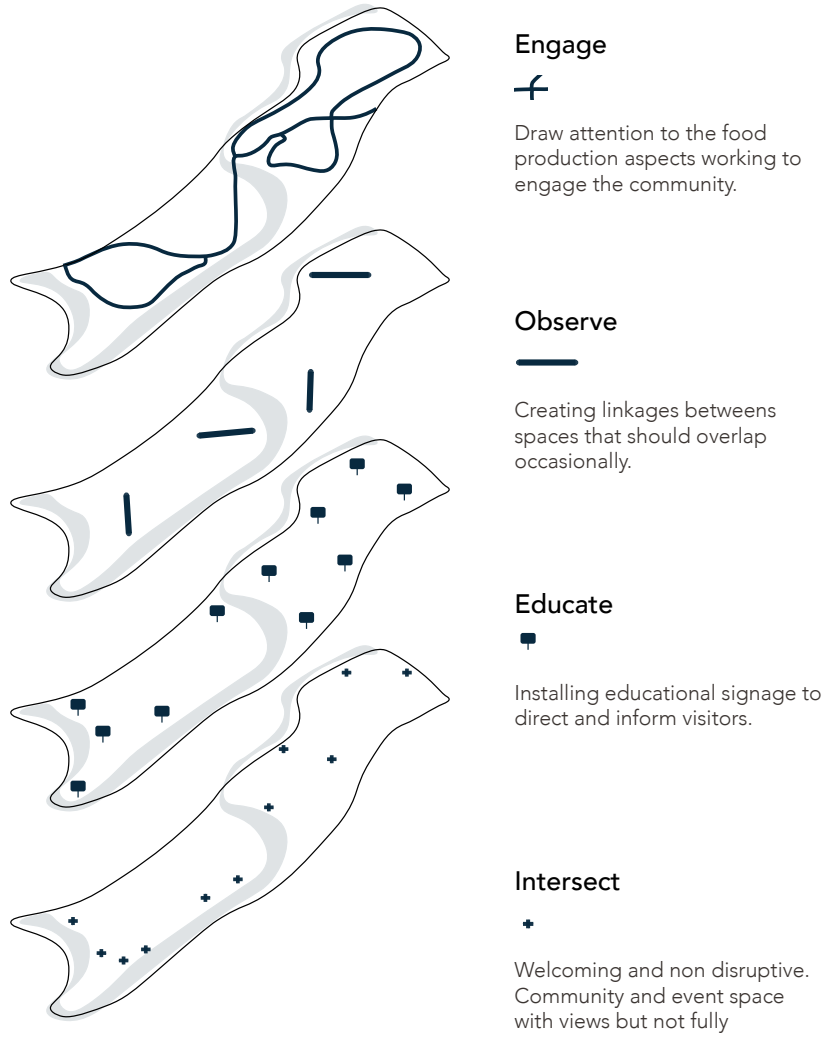
Figure 6.07
Design Guide Sociability (Madsen 2021)

Access

Creating access within the site was vital. Ensuring all types of visitors' ability to experience the park creates exclusivity. Maintaining proximity for visitors' education, walk-ability connections for food sharing, rural scenery, and access for the old and young were all integrated into the site's design (See Figure 6.08).

Proximity

Agriculture production close to visitors for an immersive and educational experience.

Local Access

Ease of access for locals to walk and maintain local produce within their community.

Rural Scenery

Utilize natural elements of the surroundings. Capitalize off the rural scenery.

All-Access Areas

Create fluid connections with easy access for all ages to feel included.

Figure 6.08
Design Guide Access (Madsen 2021)

Governance

The site design aims to include elements of governance in various ways. Through implementing community support programs, agritourism attractions, consistent income for maintenance, and year-round functioning program the site increases community involvement and the ability to self operate (See Figure 6.09).

Invite Knowledge

Increase local awareness and support initiatives for sustainable practices.

Attractions

Creating and maintaining popular attractions to boost local jobs.

Income

Designing areas for consistent and reliable income for farm maintenance.

Year Round

Areas open to the public year round for community gathering and events.
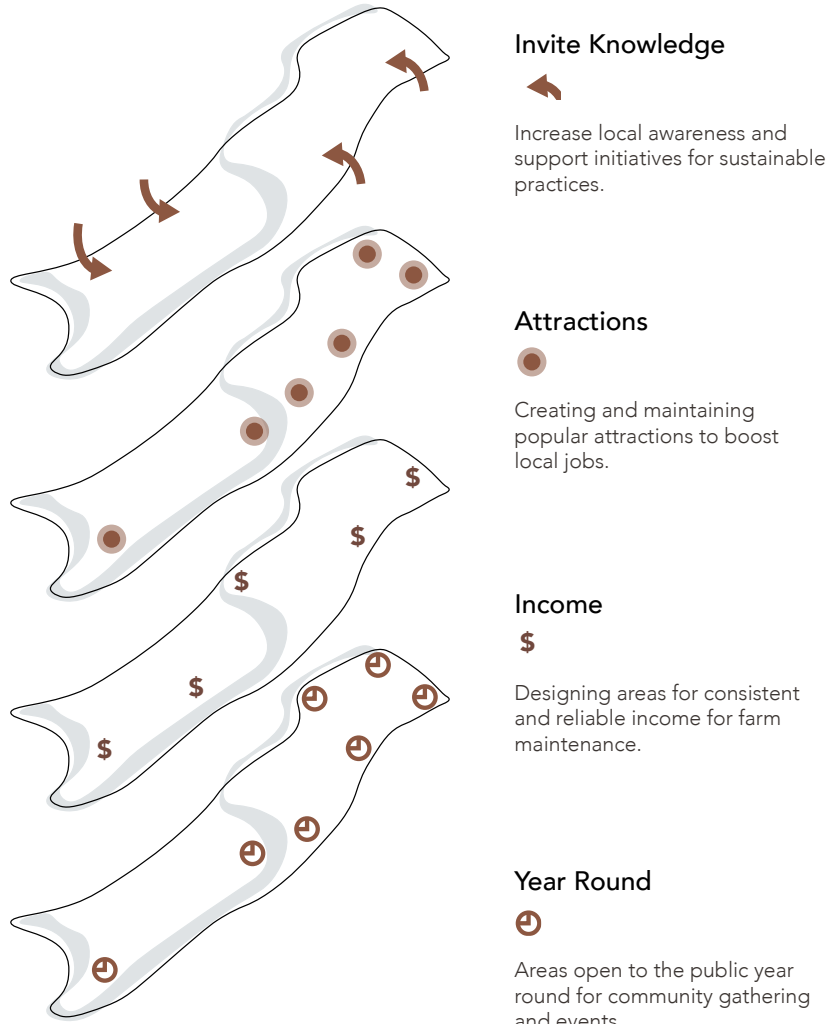
Figure 6.09
Design Guide Governance (Madsen 2021)

Economy

The Economy section addresses how the site design will generate more income. By integrating agritourism practices the site can bring people to the farm to spend money in multiple ways. Through an on site market, local spending, and local partnerships the site can be economically self sustaining (See Figure 6.10).

Generation

Agritourism program elements ability to bring visitors in and spend money.

Local Spending

A locally owned business can help raise community involvement and local spending.

Inviting

Maximizing visitor friendly aspects. Improve local partnerships for funding.

On Site Market

Area for a visitors center and shop to promote on site and local fresh produce.

Figure 6.10
Design Guide Economy (Madsen 2021)

Implementations

After reviewing the design guides, the diagramming process re-assured the design's potential to meet the guideline requirements. By recognizing the five categories of the guides; access, activities, sociability, economy, and governance within the design, the design's ideals became the plan's physical features. The design guide categories were loosely translated into the four program groupings. To address the program groups by area within the graphics, each type was given a symbol. Each icon stands for the activity that potentially takes place there.

Agriculture

Reviving agriculture for crops such as sorghum while improving ranching cattle. Other areas can work as permiculture, housing orchards for multi use and production. Nature on site such as the river can support agriculture.

Recreation

Keeping fields and open pathways with clear signage to bring people to and through the site. Adding park elements to a farm can be the first step to educating and introducing the community to the production of food.

Tourism

Retail and market space on the farm site can potentially improve sale from visitors as well as raise local awareness for the community supported agriculture. Tours can boost education and help create collaborations for other programs.

Lodging

Adding camp sites for tents and lodging cabins for rent visitors can be tempted to stay longer for a nature bound get away. The lodging can be a segway for hosting events such as weddings that can support the agriculture and produce on site.

Testing the Guides

To start the design application, I first had to reference my guidelines. In testing the design guides I had to see what program elements were working collectively. I wanted to see the areas of overlap and see how they were working to compliment the design or how they could potentially create limitations within my design. Through the process I was able to outline two major organizations (See Figure 6.11). Overlapping areas such as lodging and tourism, lodging and nature, or agriculture land and regulated tourism created the right amount of intersections, walking the line of immersive but non-disruptive. In this study I also found that areas such as tourism and nature should stay on the outside acting as a border and agriculture land should stay uninterrupted when possible. In designing with these spatial program placements I was able to test various organizations that worked to compliment their adjacent spaces.

nature   lodging   tourism   agriculture land   nature

nature   lodging   agriculture land   tourism
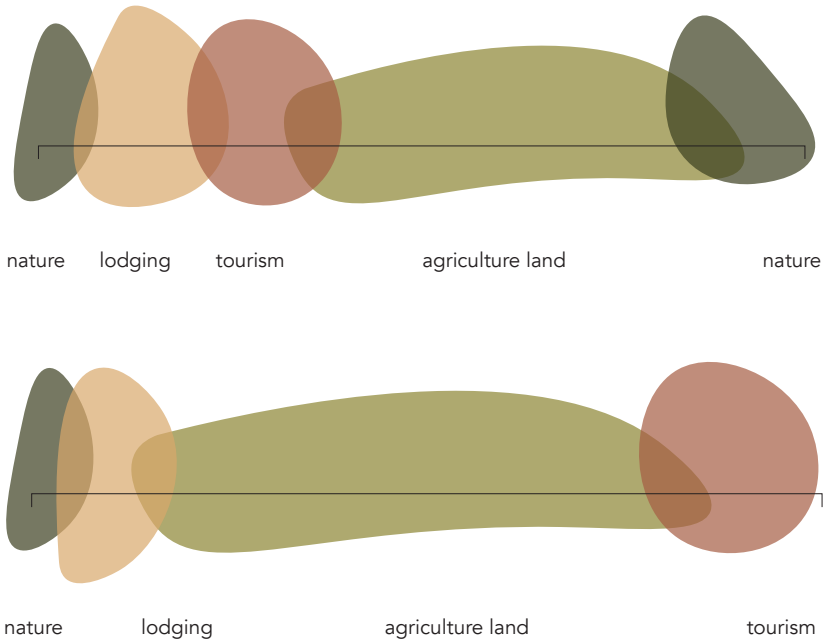
Figure 6.11
Design Guide Test Run (Madsen 2020)

Spatial Organization

After drawing from the design guidelines I was able to run through the potential design possibilities for programming within the site. I was able to stack the design program diagrams to overlap and designate areas that can encompass those specific design elements. The design had fluid movement across the different programs and worked to represent a plausible spatial organization (See Figure 6.12).

Bonner Springs

Lodging + Accommodation

Welcoming and non disruptive. Event space with views.

Natural Space

Open for use, utilize existing natural features (Kansas River).

Recreation

Accessible for tourists to occupy. Room to activate community and visitors.

Agriculture

These areas are kept uninterrupted when possible.

Frisbie

De Soto

Agriculture   **50%**

Recreation   **24%**

Lodging + Accommodation   **10%**

Natural Space   **16%**

Figure 6.12
Design Approach Test Plan (Madsen 2021)

Nature

Agritourism/Seasonal Fields

Crop Fields / Grazing Fields

River Recreation / Visitor Center

On-Site Market / Tourist Locations

Lodging

2000 ft

8000 ft

4000 ft

12000 ft

N
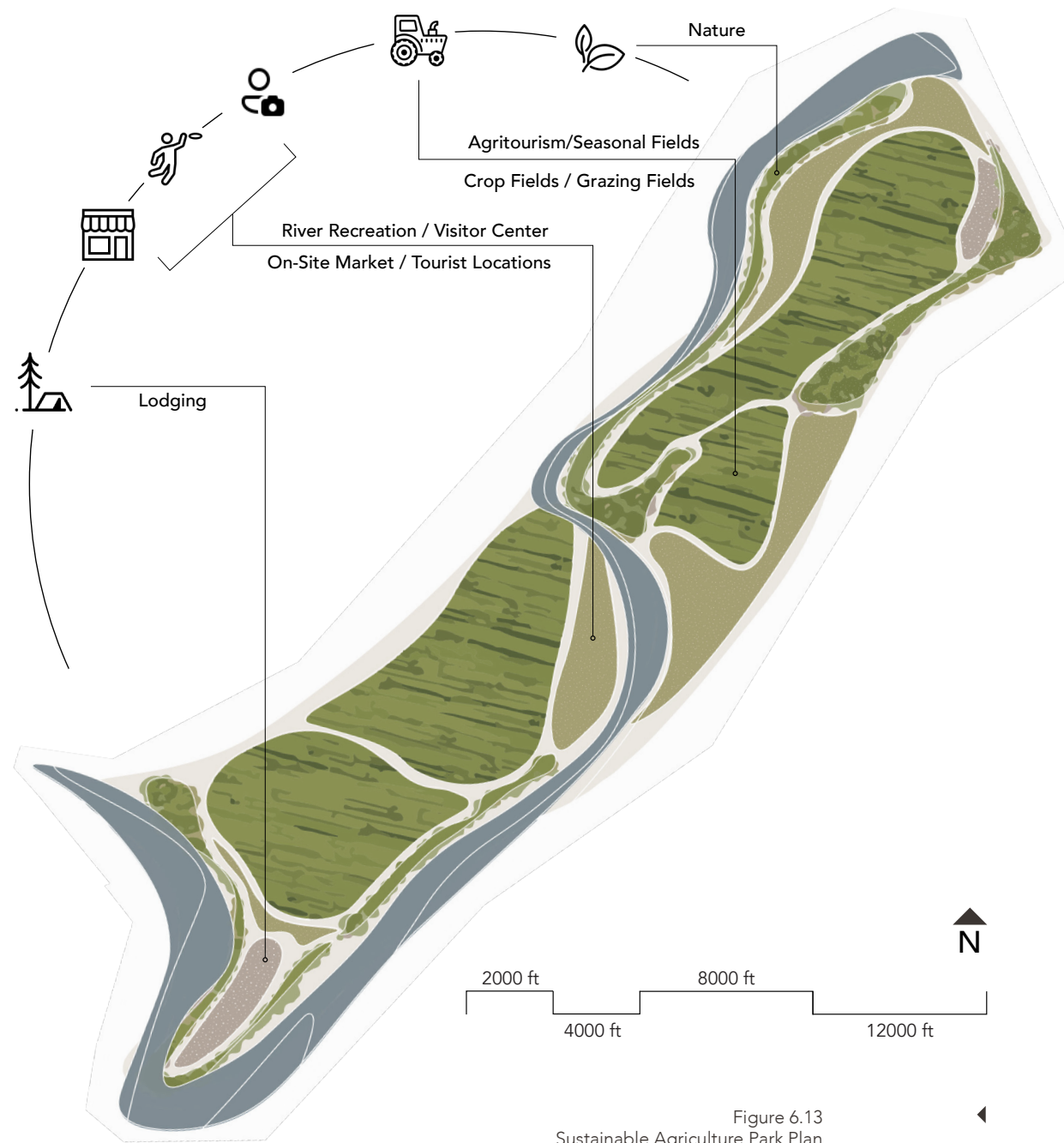
Figure 6.13
Sustainable Agriculture Park Plan
(Madsen 2021)

x.

Application of Design

A substantial plan was rendered to identify the whole site organization to depict the various areas across the 2,762 acres (See Figure 6.13). Sectioning the design helps provide a deeper insight to how the projective programming works in relationship with how the design will actually be experienced. First, I explored spaces surrounding a market in proximity to the agriculture production (See Figure 6.14). Next, I looked further into visitor accommodations including the placement of lodging along with agriculture production and natural appreciation (See Figure 6.15).

Figure 6.14
West Market Center (Madsen 2021)
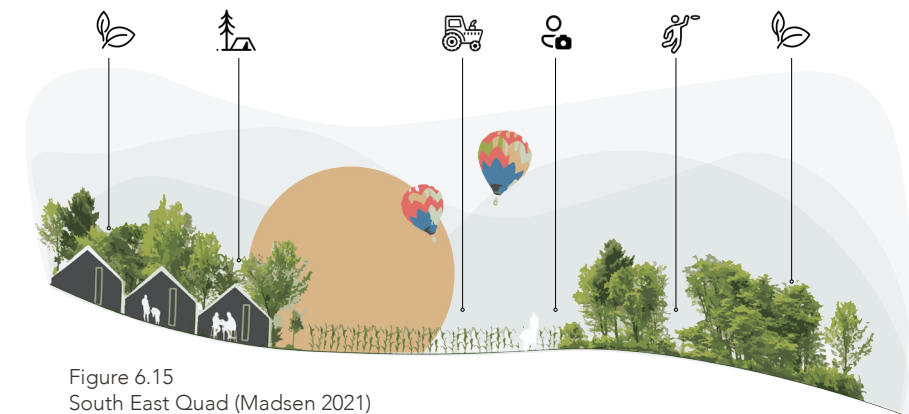
Figure 6.15
South East Quad (Madsen 2021)

Bringing Life to Programming

After identifying spatial layouts for the plan I moved into creating an atmosphere for the design. To replicate the design ideals from tourism revolving around agriculture a series of program nodes was explored. First recreation/tourism identified the activity centered spaces and depicted the accommodations provided for visitors for immersive experiences and viewing opportunities (See Figure 6.16). Second, nature exploration was identified (See Figure 6.17). The agriculture node came next, this explored the potential for year round production and sale (See Figure 6.18). Last, the lodging node explored the casual and relaxing activities taking place around camping and lodging (See Figure 6.19). Each node worked to amplify the experiential values of the design.

Figure 6.16
Recreation Node (Madsen 2021)

Figure 6.17
Nature Node (Madsen 2021)

Figure 6.18
Agriculture Node (Madsen 2021)

Figure 6.19
Lodging Node (Madsen 2021)

Phasing

To understand how the design works, a phasing plan was outlined (See Figure 6.20). The phasing plan shows the step by step process for implementing programming that will work comprehensively within the design. The first step to creating an agriculture park is bringing the agriculture. The design needs to start with revitalizing current/traditional agriculture and bringing it to a community in need within phase one. Phase two should begin to include both recreation and tourism program elements. Bringing people to the site for activity such as running, biking, or fishing begins to create the layers a multi-function site would have. The recreational aspect would be the initial attraction for the surrounding community users. In creating tourism and retail the design begins to become a complete system. The site can also create a link for local sites and local economy. The last phase includes lodging. Creating lodging within the park will create an immersive experience that can be offered to the community and visitors that doesn't already exist within the area.
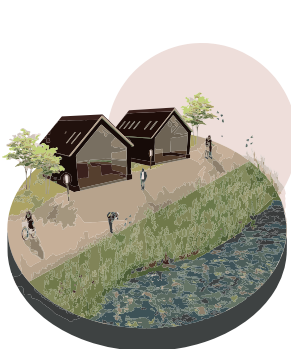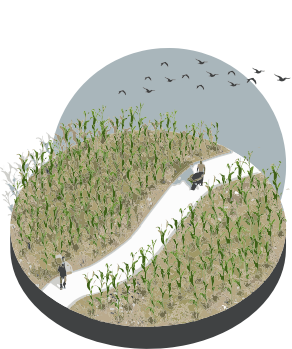
Figure 6.20
Design Phasing (Madsen 2021)

①
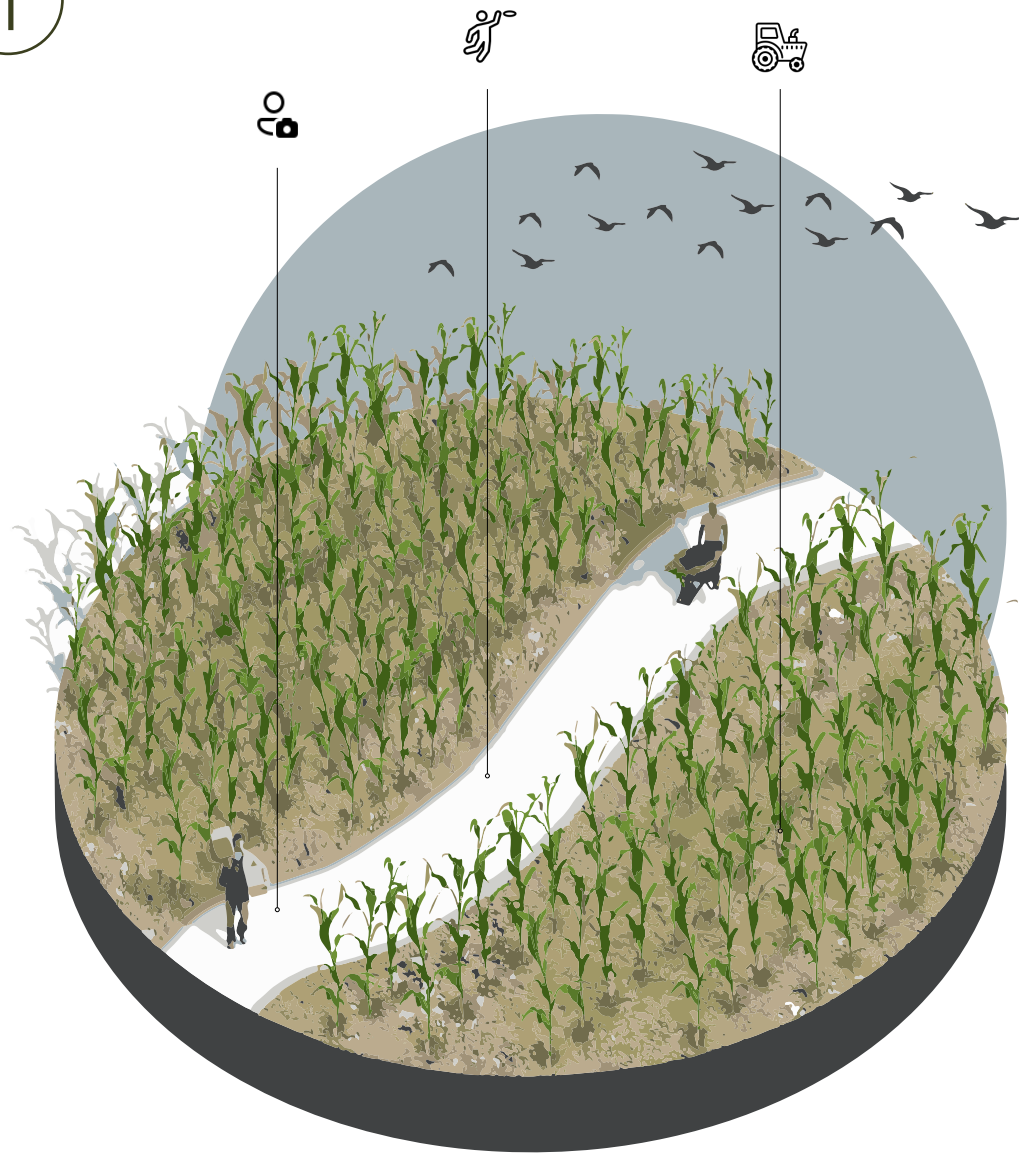
Figure 6.21 South Field Production (Madsen 2021)
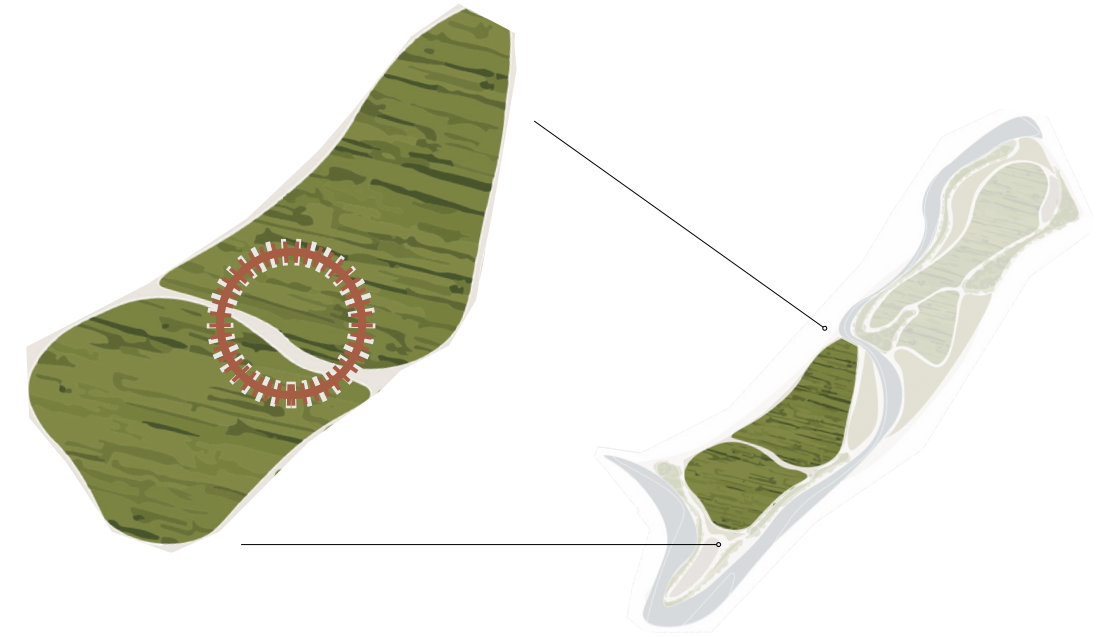
▶ Figure 6.22
South Field (Madsen 2021)

xii.i   **Phase One - Maintaining Productivity**

As you move to the lower half of the plan the design becomes more meditative (See Figure 6.22). In crossing the river the design should have a quiet and rural feel to it. Moving south the farm fields will become more serious production and will be the main farm focus including corn and soybeans (See Figure 6.21).

In moving away from the tourism and park-like attractions of the site, people looking for a more naturalistic space can find it. With lodging and the creation of rural views the natural features of the site such as the river will take precedence (See Figure 6.23).

Figure 6.23 Indirect Working
Farm Contact (Madsen 2021)

②
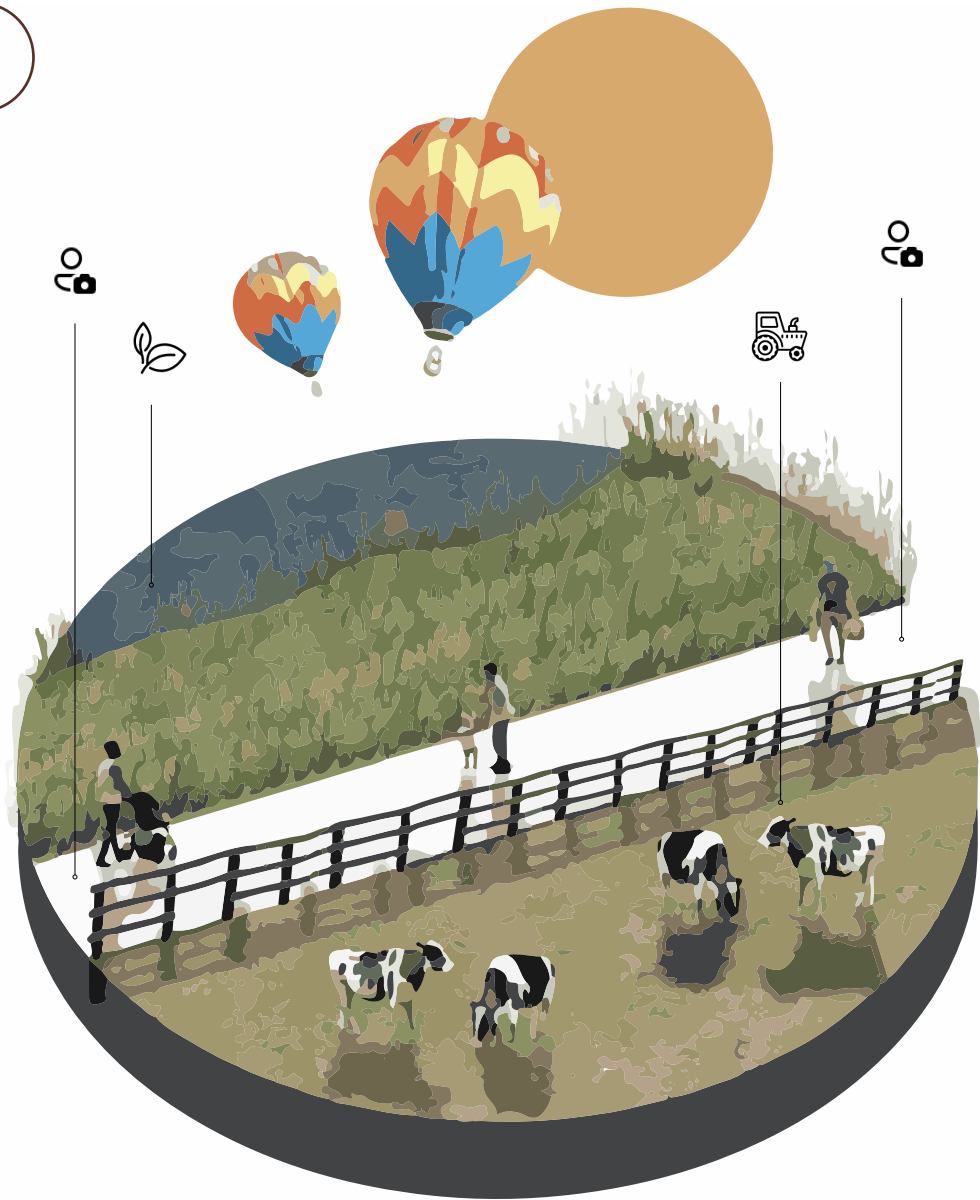
Figure 6.24 Local Attraction (Madsen 2021)

◀
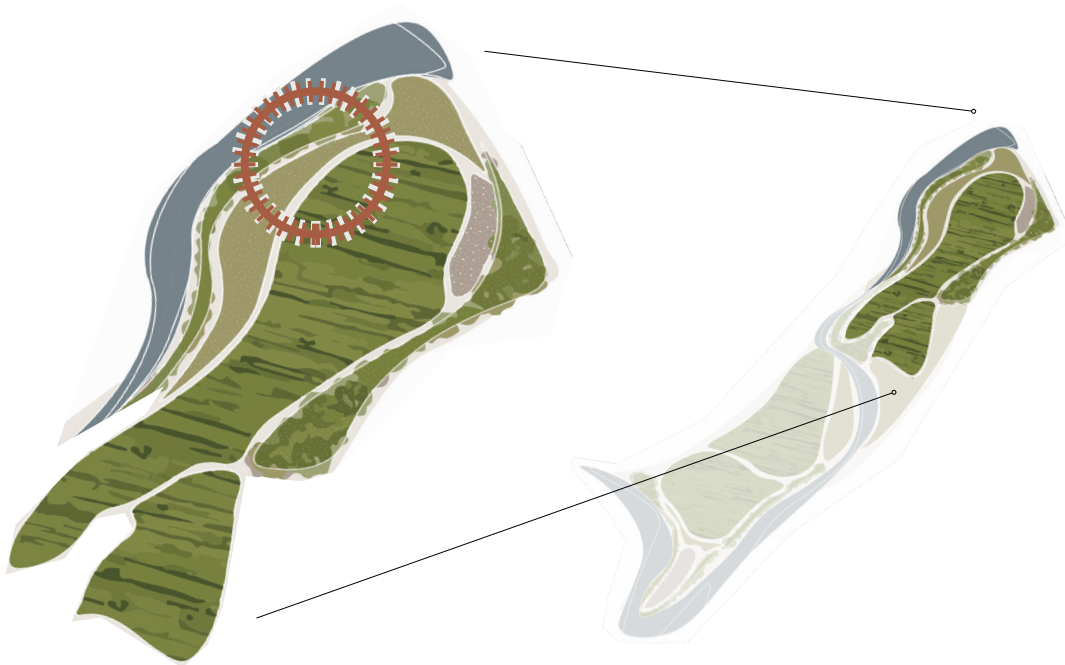
Figure 6.25
North East Attraction (Madsen 2021)

▶

xii.iii   **Phase Two - Local Attractions**

The upper (north eastern) left field is dedicated to grazing. Introducing cattle and horses to roam 400 acres (over 4 acres per dairy cow) of land, all where visitors can see and interact with them (See Figure 6.25). As dairy cows can be used to produce milk and cheese, horses can contribute to tourism for riding lessons or site tours (See Figure 6.24).

The lower right (south-eastern) field is dedicated to agritourism production such as pumpkins. Creating an area where visitors have close access to interactive farming. Keeping visitors near entries and accommodations to delineate spaces (See Figure 6.26).

②

Figure 6.26 North
East Passive Grazing
Experience (Madsen 2021)
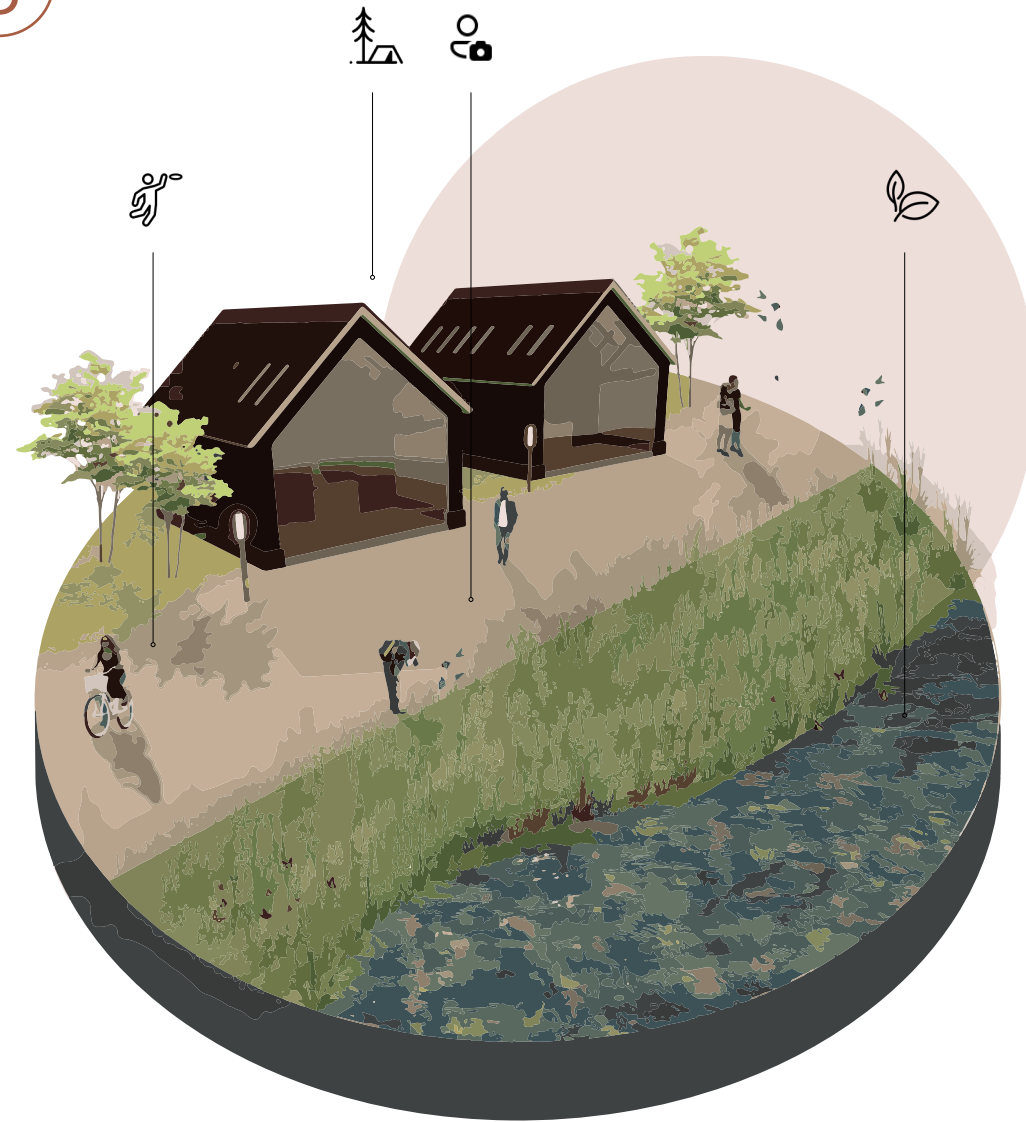
Figure 6.27 South East Lodging Experience (Madsen 2021)

xii.ii   **Phase Three - Immersive Experience**

The lower portion of the site as mentioned before is designed for immersion (See Figure 6.28). This location was specifically selected for lodging, campsites, and visitor accommodations due to its proximity to existing nature and the Kansas River. In addition there is a major recreation trail connecting to De Soto south of the site and Bonner Springs through and to the north of the site (See Figure 6.27).

Making this attraction more accessible and opportune. The contrast between the areas of the top and bottom will appeal to the different needs for the site and want for various activities (See Figure 6.29).
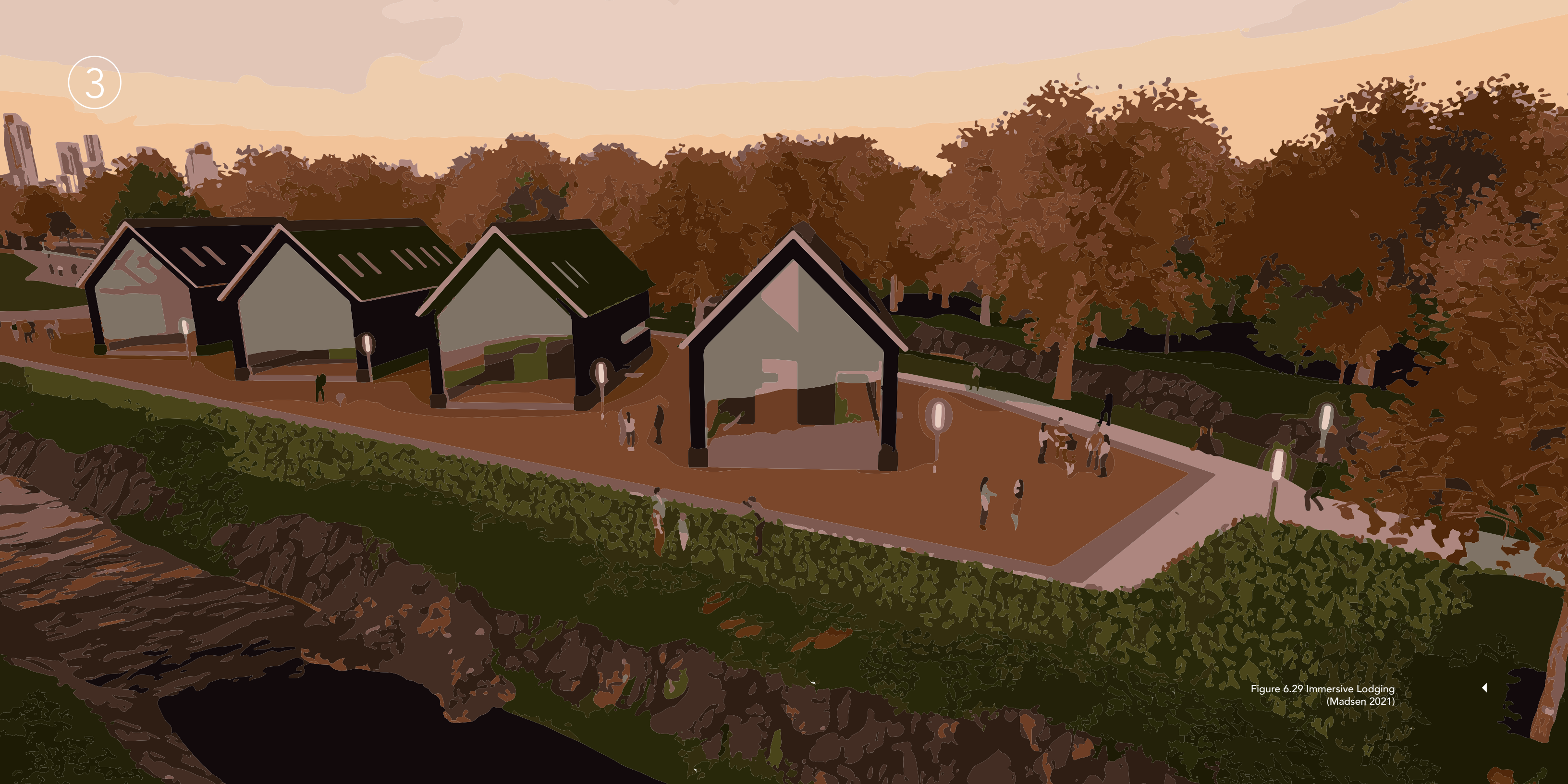
Figure 6.29 Immersive Lodging
(Madsen 2021)

Informing the Metrics

After creating a design it was time to test what it could achieve. To assess what the design can contribute I conducted an examination through metrics. The metrics act as a first round review to reassure the design includes the factors it needs to work efficiently.

I created my own metrics as sustainable agritourism designs do not have an existing set. By taking inspiration from the LAF (Landscape Architecture Foundation) existing metrics guide, I was able to create my own. The LAF performance metrics have over thirty-three defined benefits categories and each are labeled as one of three overarching classifications; economic, social, environmental. These existing metrics were set to examine case study projects to understand their overall success and contributions per each selected category within that metrics set (LAF-2018).

By tailoring the LAF metrics into a new format, they will be able to measure the landscape, sustainable farming and agritourism sides all in one design.

In this case, I used the metrics as a check list, analyzing how my design achieves or meet these categories. I can suggest my design would be successful when the categories and subcategories are integrated into the design. The metrics are organized into different categories derived from the projects design pillars. Each category of community, environment, and economy references the 3 P's of people, planet, and profit to recognize all aspects of design (See Figure 6.30).

Figure 6.30
Design/Metric Pillars (Madsen 2021)

Economy : Jobs

"Economy," references the financial aspects of the design such as the generation of both jobs and money for the local community. This section of the design metrics pertains to the designs ability to fund sustainable agriculture through the use of agritourism.

1. Tax Benefits: Implementing educational training of practices the design can gain additional non taxable private funding.

2. Increased Revenue: Generating (at least) x1.75 more money to fund sustainable methods/transition.

3. Multi-Function: Increased multi-use with various activities and programming for more opportunities for income.

4. Local Food Sale: Increased local food sale with an on site market. Generate local awareness through local food sale and accessibility.

5. Job Creation: Create more jobs through the implementation of more programming and community run events, programs, and organizations.

6. Local Spending: Increase local spending by bringing people to the site with new things to do and see that are worth paying for.

Community : Justice

"Community," is associated with the involvement of people, specifically the community and the elements that make it unique. This category addresses the social issues of creating community values and providing food in an area in need (one design cannot address all social issues).

1. Historic/ Cultural Preservation: Associating the design with specific people, events, and cultural values. Recognizing the regional and site identity to help create awareness of local heritage.

2. Recreational: Open green space to add park like elements. Plazas and trails that provide places for an array of recreational, social, and community functions to increase social interaction within the community.

3. Educational: Providing a learning opportunity through natural engagement.

4. CSA Involvement: Promoting local food buying/sharing and involvement through the site and the on-site market. Raising awareness of farm and food organizations through events.

5. Justice-Social Value: Fostering spaces for health and safety, incorporating accessible green spaces and views of rural landscapes.

Environmental : Decarbonization

"Environmental," refers to the environmental stewardship of the implemented design. The environment category acknowledges the sustainable aspects of the design and how it improves upon the sites surrounding nature.

1. Scenic Qualities: Views and visual quality were prioritized in areas of high scenic or cultural value. The site design can enhance these aspects.

2. Food Production: Promotes nutrition and addresses food security. The resulting crops are consumed by the producers, grown for local restaurants, or sold in local farmers markets.

3. Waste Reduction: Site design and management practices can minimize the amount of waste generated, encourage recycling, and provide for the composting.

4. Carbon Sequestration: Processes that include reforestation, wetland and prairie restoration, and no-till agriculture.

5. Carbon Avoidance: Carbon emissions can be lowered through strategies that reduce energy and fuel consumption for operations and maintenance. Limiting transportation of food to the local community.

6. Water Conservation: Landscape-based strategies for water conservation include efficient irrigation systems, features that recirculate water, and systems that capture and reuse stormwater, greywater, or wastewater on-site.

xiv.

Assessing the Design

After conducting a self assessment with metrics, I was able to suggest what the design (when implemented) could achieve. The projected design was able to meet each category through a design implementation element or a community organized program. These results measured that the design could achieve in providing benefits within each of the overarching categories of economy, community, and environment (See Table 6.01).

ECONOMY	COMMUNITY	ENVIRONMENT
LOCAL FOOD SALE The design has an on site market to sell local/on-site produce to community.	**CSA INVOLVEMENT** Promotes awareness for local Wyandotte county food initiative and organizations.	**FOOD PRODUCTION** Still produces food while practicing sustainable methods.
LOCAL SPENDING Bringing visitors and community members to the site as an attraction to genrate income.	**EDUCATIONAL** Provides opportunities for learning and immersive experiences within the natural/agriculture setting.	**SCENIC QUALITIES** The design enhances the rural scenery through creating views in and out of the site.
JOB CREATION Brings more events and programming to the area. The site would generate numerous jobs.	**RECREATIONAL** Includes open green space for people to utalize for community gathering space.	**WATER CONSERVATION** The design works to irrigate and recirculate water within the site.
MULTI-FUNCTION Combines farm, park, and tourism elements all into one site to create the ultimate attraction.	**CULTURAL PRESERVATION** Raises awareness for culturally significant events in proximity to the site.	**CARBON AVOIDANCE** Producing food locally to limit the need for transporting goods elsewhere.
TAX BENEFITS Generating more income from tourism and moving away from fertilizer and farming related taxes.	**JUSTICE - SOCIAL VALUE** Design promotes health in influencing people to experience the landscape and socialize with community.	**WASTE REDUCTION** Site management practices that encourage recycling.

Table 6.01
Design Application Metrics (Madsen 2021)

CHAPTER 7

7.   REVIEW & FINAL DESIGN

This chapter includes the focus group process, involving the four survey category participants of policy makers, agritourism involved farmer, traditional farmer, and potential design users. This section will explain the selected volunteer narratives (who they are and how they are qualified), what questions were asked, and what information was shared. The reason for the focus group was to act as a review of the design application. Reviewing the design with a focus group lead to further design and metric revisions.

The group interview process is depicted through various text, graphics, images, and tables. The group interview files are also located in the appendix (See Appendix C).

i.   Focus Group Purpose

The focus group looked to include participants from the survey to join in a group interview style design review. This step of the research process was meant to give my design application a level or idea of plausibility. With the members of the survey participating they will have a better idea of what the design looked to encompass after sharing information about the delineated categories of agritourism and sustainability. The focus group looked to include as many volunteers available for an intensive review. The discussion was centered around how the design would work as I facilitated the discussion, promoting conversation with a series of prompted questions and topics.

ii.   Additional Participation (From Survey)

Would you be willing to participate in an additional focus group discussing a potential design solution for Wyandotte County?

To my surprise over 80% of policy maker participants were willing to take part in a focus group. While only 27% of potential design users were willing to participate in the additional step (See Figure 7.01). Each volunteer provided their contact information and was selected on their ability to best represent their categories median responses. Roughly 17 survey participants were willing to volunteer and were contacted to set up the meeting, deciding a date and time to conduct the focus group.
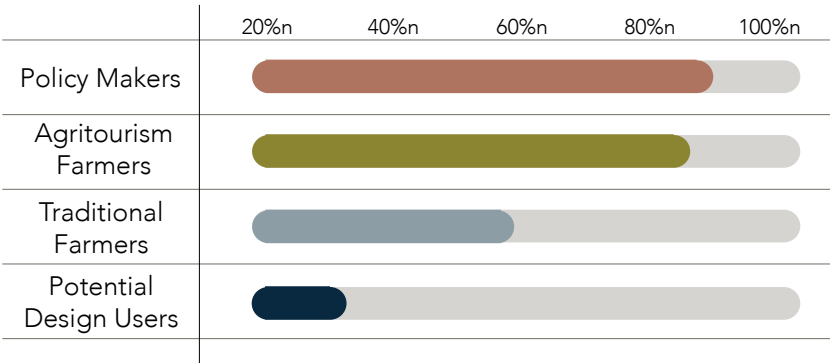
Figure 7.01
Additional Survey Response Question (Madsen 2021)

iii.   Focus Group Intentions + Set Up

Resulting from the focus group, I looked to gather themes between the respondents. I wanted to analyze how their responses overlapped and what they thought the design's plausibility would be, especially within this area. If people thought the area would adopt or would not accept, these results would help steer my design into a more plausible implementation. The focus group's ideal outcome is that the participants deem my design plausible and acknowledge my self-assessment metrics to covering all of the bases. As that is the best outcome, other results leading to adjusting my design and altering my metrics would still be beneficial as they would re-correct my path to creating a successful design approach.

After setting up the group interview session, I prepared a forty-five-minute outline for the meeting. The meeting started with a ten-minute presentation on the research summary, design, and self-assessment results. The group was then able to comment and share their initial thoughts. Last, the meeting transitioned into the discussion questions covering design ideas to help narrow the review topic. By sharing a select set of information, I prompted the group with questions and facilitate the conversation. The entire content of information shared with the focus group can be found in Appendix D. I prompted the group with three categories of questions to base the feedback on.

Design

The first series regarded the design itself, asking if the plan and spatial organization made sense in the comprehensive layout. Additionally, I wondered about the phasing of the design and how that would potentially play out. Below are the questions I asked.

1.   Did you have initial thoughts about the design outcomes? Is the design I propose plausible?

2.   Are there any important factors in a sustainable agritourism farm my design did not address?

3.   Are there more areas that should be designated for tourism or farmers that would have to implemented?

Measures

The second section of questions was directed at the measures of the design I offer. These questions centered on how the design guidelines address each element needed in a design like this and how the metrics can thoroughly review and assess the plan's implications after its potential implementation. Below are the questions I asked.

1. Do the design guides categories address the needs of a sustainable agritourism site?

2. What do you think of the metrics? Do the categories address the range of benefits a project like this could have?

Broader Discussions

The last category covers the more prominent and more general themes my project worked to protect. These questions pose a discussion about the idea of agritourism. The questions also surrounded the preconceived notions about sustainability and the specific practices adopted or used. Below are the questions I asked.

1. Do you think that agritourism can generate the money to support sustainability?

2. Do you believe agritourism is worth the hassle to gain the potential benefits?

3. Is agritourism an easy thing to adapt or implement within your farm or is it just as hard as the farming operation itself?

iii.   **Focus Group Participant Narrative**

After contacting the volunteers and setting up a meeting time, five participants were present for the focus group. Each volunteer contributed to the forty-five-minute discussion that I facilitated. Of the volunteers, there was at least one person from each category (design user, policymaker, traditional farmer, and agritourism involved farmer) present acting as the survey group representative defending and speaking on each category's behalf.

iv.   **Focus Group Major Takeaways**

The first and most prominent takeaway from this design review step was that the design I have offered is plausible. The focus group participants reassured my design proposal's ability to bring people to the site, enabling visitors to explore the site and share practices and information. The site's ability to share brings all types of people within the community together in one place to learn and share, which in the case of being sustainable and agritourism involved is successful and plausible.

The focus group members also suggested that the design function as a sanctuary, creating a more meditative design for the farmers could make the design more successful. The new design could create a meditative space for both farmers and visitors to separate from the city's bustle.

For the site design's ability to function successfully with agritourism components, the focus group mentioned various ways to generate money by initially inviting visitors to the site. By offering a visitation membership or tickets for visitors to access the farm, income generation can be more consistent and steady. Another approach for generating money for the operation is offering training courses for other farmers to learn the practices adapted at this farm and implement them in their own process. Generally, the site could include dedicated spaces for educating people through small sessions, introducing sustainable and agritourism practices.

The focus group also had many suggestions towards how my research could continue to expand and engage. The site has the potential to act as a link for other agriculture attractions such as the agriculture hall of fame, and both can work together to promote innovation within the field. Also, the site could partner with local schools and organizations to involve and educate people.

As the focus group brought many details to light, one of the more surprising discussion points was the terminology. The first term the focus group was apprehensive about was the word sustainable/sustainability. This word is constantly used with different meanings,

which leads to the general confusion of what the word insinuates. Throughout my research, I have suggested my own interpretation of the term and how my research works to provide a new and wholesome definition of sustainability.

More specifically, the focus group participants were hesitant about the term agritourism. Within the practice of agriculture, the group indicated the term alone, 'agritourism' is thought of as overbearing and has almost a scary connotation. Participants mentioned it has an all-or-nothing type of implication. The group noted that term also suggests, with the implementation of agritourism, the design covers and addresses the ideals of education, recreation, information, and involvement.

The idea of agritourism can be successfully applied at various scales. The large-scale example that my research has shown works to cover the potential for all types of sites. A smaller site can then draw from what this example offers and piece together a design that might better reflect their farming operation. The group also mentioned that this design did an excellent job showing these designs don't have to start with a blank slate and that other farmers can see that it's possible and obtainable for them. With this point, they touched on one of the main parts of my design application, showing how this could be implemented to create a more tangible example that people can compare with, learn from, and adapt to. Another agritourism mention within the focus group session was becoming agritourism registered. By being a registered agritourism farm, the operation is provided a level of protection, and it can decrease liability with things such as flooding and visitor mishaps.

The group suggested many ways for the community to be involved and help with funding and that the government was just a start in their interest to fund decarbonization projects. As I have mentioned before, by the design and operation partnering with research and education-focused organizations, more money could be generated through donations and private fundraising to avoid government involvement. These decisions can be very dependent on the site. As Wyandotte county is an area in need of food sharing (its location within a food desert), the community will be more willing to support the idea and get involved. That is not always the case.

v. **Further Engagement**

I received an additional suggestion from the group interview to reach out to the county appraiser and contact the landowners. Although they would have extensive information about the area, there is also the potential for them to be biased about implementing anything onto the site. On this occasion, the site information does not need to be expanded. The site is being used as an example showing the application of my design approach. It would only be beneficial to reach out to the landowners to share the idea I have come up with in relevance to their land and what could potentially be implemented and how it could be improved.

vi. **Focus Group Results implementations**

There were many details the focus group brought to my attention that can limit the design or hinder it in some way—starting with the budgeting for implementing agritourism also being a costly venture. Other site-specific implementations such as bridge or flood adverting design elements would raise the cost of adding agritourism to the business. As these are additional costs, they will not always be a factor for all designs. However, they would still be an investment in the property to regenerate existing and generate external income. In addition, the group interview discussed the farmers who would implement these practices would want to know how much the entire implementation would cost before advancing with the idea. For each property, that would be different. Still, the only solution I can provide to this potential issue would be to follow my approach, and it will give the best outline of what is expected and what some of the more or less costly implementations could be.

One of the essential things I wanted to adjust within my design approach was its ability to be implemented at various scales. The example needed to function for a range of application from small to large farm operations. I believe this could be achieved by following the approach I have outlined. Also, I wanted to address the groups notes about the terminology and how both the words 'agritourism' and 'sustainability' are being re-defined in the process to cover a better meaning for future use.
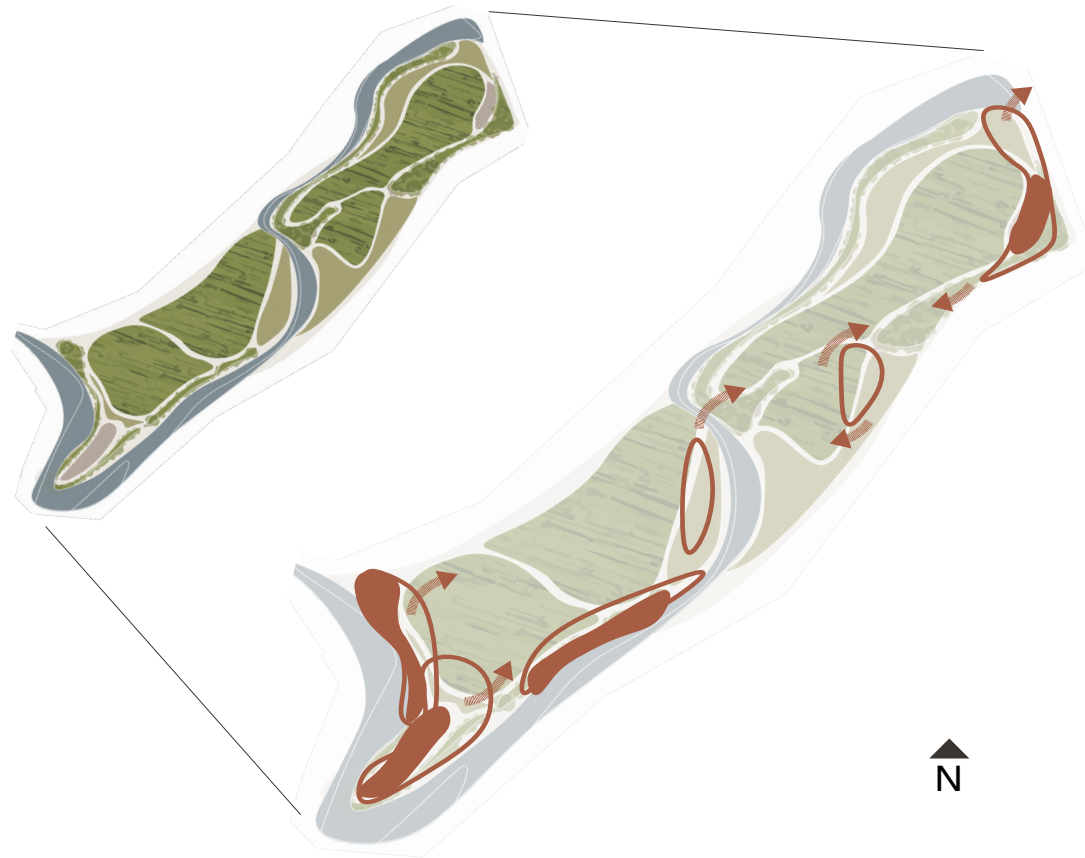
Figure 7.02
Sustainable Agriculture Park Plan Alterations
(Madsen 2021)

vii.   **Revising the Design**

After discussing the specifics of the design in the focus group I needed to return to the physical layout and alter what was proposed to match the new suggestions (See Figure 7.02). As there were limited design changes, the biggest thing I wanted to address was to add more nature centered space to make the design act as a sanctuary and get away. I also went back to make a bigger area for tourists, adding a training center more integrated into the farm land. Lastly I wanted to make clear linkages to spaces off site that the design works to connect.

Making More Connections

To apply the focus group themes to the design, I needed to understand how the additions would effect what is working. The ideas were drawn out to represent changes to the initial design as physical elements. The changes were explored in a series of diagrams (See Figure 7.03).
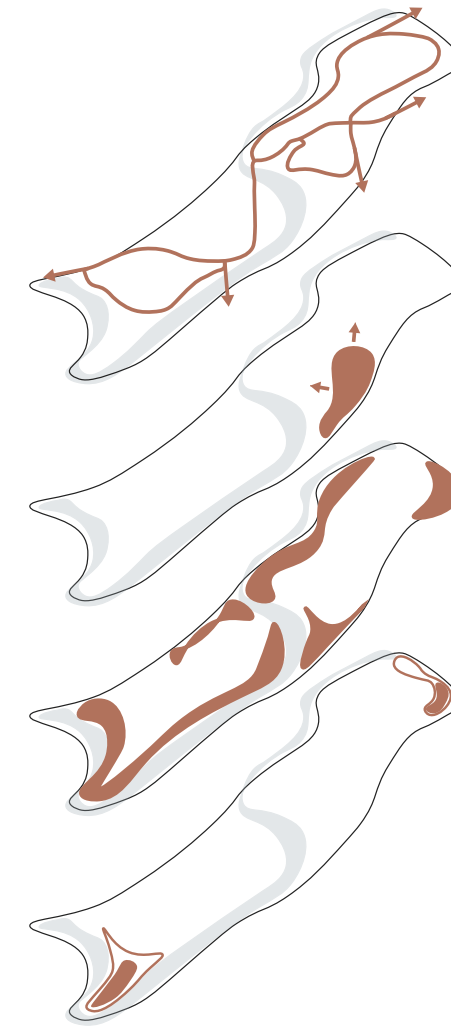
Expansion

Create clearer pathways and signage across the site to define the outside linkages.

Integrate

Create another tourist center solely for educational events and training session purposes.

Natural Barriers

Installing more natural land for less maintenance and creating barriers making a rural sanctuary.

Further Engage

Creating more spaces dedicated to visitors to create a tourist front for the farm.

Figure 7.03
Making More Connections (Madsen 2021)

Figure 7.04
Sustainable Agriculture Park Plan Alterations
(Madsen 2021)

viii. **Adjusted Design**

After reworking the suggested elements into the plan through a series of diagramming, The design was finalized. The complete design was adjusted to work more cohesively and introduce more visitor specialized spaces (See Figure 7.05). In addition, the plan was looked at in a larger scale to outline the changes in detail (See Figure 7.04).

Figure 7.05
Sustainable Agriculture Park Plan
(Madsen 2021)
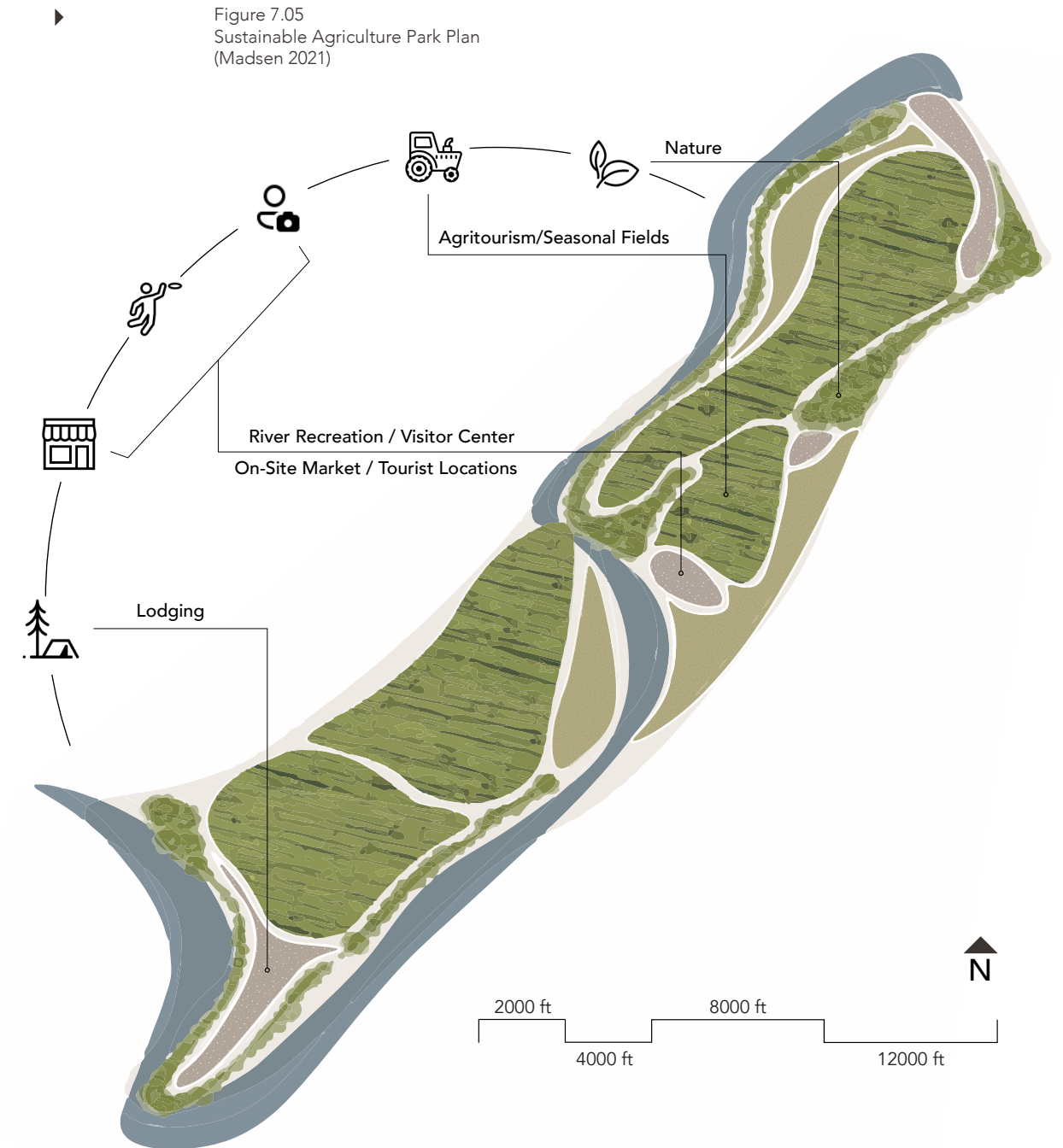
Re-working the Metrics

As the group only had a few physical design changes to offer, they had many more opinions towards the self assessing metrics. In adjusting the metrics one of the biggest suggestions was to reassure why I am calling the design an agritourism park. The design and word "agritourism" insinuates the project will provide education, inclusion, recreation and community involvement. With that in mind the metrics were shifted to ensure the design met those standards (See Figure 7.06). In addition, the metrics were altered to reflect the metric categories which the focus group mentioned. The metrics need to clarify cultural preservation to rural tourism increases. The group also wanted the metrics to address community involvement as the social value sub-category by pointing out how to gain volunteers or partnerships with local organizations to better the designs outcomes. Last the group wanted the metrics to relay more realistic economic expectations to the future farmers by addressing more applicable economy centered sub-categories.

Figure 7.06
Re-working Design Metrics (Madsen 2021)

Re-assessing the Design

The new and altered metrics can now address each aspect of the design (See Table 7.01). These metrics show that the design was able to meet success under many different sub-categories. The new set of categories will make the metrics more accessible and applicable for others when replicating the design approach. The adjusted metrics worked to aid my design in understanding what should be included and keep the goals of the achievements of the design clear. Once the design can meet each category's themes, the design can be considered successful in reaching a sustainably centered agritourism park design.

ECONOMY	COMMUNITY	ENVIRONMENT
LOCAL FOOD SALE The design has an on site market to sell local/on-site produce to community.	**CSA INVOLVEMENT** Promotes awareness for local Wyandotte county food initiative and organizations.	**FOOD PRODUCTION** Still produces food while practicing sustainable methods.
INCREASE LOCAL SPENDING Bringing visitors and community members to the site as an attraction to genrate income. Buying local produce.	**EDUCATIONAL** Provides opportunities for learning and immersive experiences within the natural/agriculture setting.	**SCENIC QUALITIES** The design enhances the rural scenery through creating views in and out of the site.
ADDITIONAL JOBS The site would generate numerous jobs. Maintenance, visitor welcome and management jobs would be needed.	**RECREATIONAL** Includes open green space for people to utilize for community gathering space.	**WATER CONSERVATION** The design works to irrigate and recirculate water within the site.
MULTI-FUNCTION Combines farm, park, and tourism elements all into one site to create the ultimate attraction.	**RURAL TOURISM** Raises awareness for cultural events in proximity to the site. Bring people from the city to the rural setting.	**CARBON AVOIDANCE** Producing food locally to limit the need for transporting goods elsewhere.
INCREASED FUNDING Partnering with research based organizations to get private (non government involved) funding and donations.	**COMMUNITY INVOLVEMENT** Design promotes people from within the community to gather, share and buy local food from the farm.	**WASTE REDUCTION** Site management practices that encourage recycling.

Table 7.01
Design Application Adjusted Metrics (Madsen 2021)

CHAPTER 8

8.   CONCLUSION & DISCUSSION

To conclude my report, I synthesize the information gathered along the research process to suggest a design approach to be used as an example for future sustainable agritourism design. Additionally, I discuss the contributions of the research and potential for future research to build on my findings.

i. Report Summary

This work looked to engage the dilemma of climate change and agriculture we are facing and must address. In addition, the report worked to answer the question, could sustainable agriculture become more obtainable through the introduction of agritourism? In addition, to understand the benefits we could see from such implementation?

In response to this question, the report recognized existing practices and the current climate change dilemma and agriculture. Climate change has been rapidly adjusting the environment in which our food and agriculture production relies. Since the rate of impact and levels of worry has been consistently increasing, more research has been devoted to finding a solution resulting in more sustainable practices. The issue surrounding this solution is that it can be hard to adapt to current practices. In looking for an answer, I sought to research and outline an approach to integrating agritourism and sustainability into a farming design.

By realizing there was a lack of money for adapting sustainable practices along with the ability for generating of money in agritourism practices, I fused sustainability and agritourism together. In referencing the two separate practices as a pair I was able to recognize an opportunity for a reliable and beneficial solution. I also created a design to depict how the approach would layout in a real-world application. After finding an answer to the question of sustainable agriculture becoming more obtainable through agritourism, I took the process a step further to analyze the solution's plausibility. A focus group style review called out the flaws within my design. As my design was based on the data collected in previous methods, I needed to understand how these technical ideas would pan out in reality. Resulting from the review is a revised design that could be successfully applied and a set of metrics that works to assess the validity of the design along with work as a future model to evaluate procedures of the same caliber for success and plausibility.

Overall the process revealed an approach. When looking to implement sustainable practices to a farm, agritourism can be the push to get the ball rolling. This research process depicted how to fuse the two themes to create a design that addresses the need for sustainability.

ii. Thesis

At the beginning of my research, I hypothesized that implementing elements of agritourism (through revenue generation) would provide farmers the ability to implement sustainable agriculture practices. I also speculated that this would not only work successfully to create a sustainable agritourism park but that their would be various benefits within the design pillars of environment, economy, and community. Through the research, after completing the literature review, comparative study analysis, survey, design application, and focus group, this hypothesis was proven to be true on multiple design based levels.

iii. Contributions

The major contribution of this research was the process in which it was conducted. The process resulted in a design approach that followed initial design guidelines and resulted in metrics showing the process proved to provide success in the field of sustainable agritourism. This research has introduced the possibility of multi functional farming operations merging with ideas of landscape architecture. This fusion aids in maintaining production of farms, generating more income and local economy through socially beneficial outlets, resulting in the ability to become and adapt sustainable and environmentally friendly practices.

The overall goal of making sustainable agriculture more obtainable was to improve farmers ability to contribute to lessening climate change effects. In introducing agritourism and park like elements to the farm, the goal was to raise awareness for local food production systems especially for cities like Kansas City. Bringing attention to rural tourism can not only generate the money needed for sustainable agriculture practices but can promote interest within the topic as well. The combined themes resulting in a sustainable agritourism park can address each of the problems together while additionally bringing food into a food desert, a community space to engage a sense of social pride, and lastly the design can create an educational space for the people to gain a better understanding for their local environment and food systems that we rely on.

As the outcome of the research resulted in a design review, the initial design and metrics needed to be adjusted to reflect the feedback received in the focus group/review. Besides minor design changes, the overall design approach proved to be successful in providing a new discovery process and design opportunity for sustainable agritourism. This report works best in providing an example process that provides a step by step guide for other designers and farmers to implement sustainability within a traditional farm.

iv.   **The Design Approach For Use**

The overall final product is the approach process I took (See Figure 8.01). As a contribution product, my report provides a straightforward approach with guidelines to follow and metrics for design assessment. This approach can work to ensure the end product for designs created with the same process. By using the outlined approach, the designer or farmer will have a clear (tested) path to implement agritourism and sustainability.

Step 1

The first step of the design approach is to identify the site, keeping in mind its ability to house both recreation and farming activities.

In addition to finding out the site's attributes, the first step should include addressing the design guides—this reference to the provided guides in chapter 4 (pg. 75) will help direct the designer to the foundational elements the design should include within the design. Following the guides will create a baseline for the design, which can then be altered to fit the specific design scenario that is needed.

Step 2

The next step can continue the site analysis stage but go further into depth about the selected area's surroundings and community.

When conducting the design application phase, keep in mind that following the design guides and creating both spaces that are separate and spaces that overlap in activation will be ideal. Having minimal yet

existing spaces where agriculture and tourism can stand alone will meet the needs of all the site design spaces.

An additional part to step two that I suggested is conducting a community survey. Understanding what the community members need will help identify what the design should include to benefit its adjacent community. Although this step may create difficulties, the potential benefits are likely to out-weigh the limitations. This step may raise local and community awareness about the project and local food production and food sharing systems.

DESIGN APPROACH

STEP 1

Identify your site. Preferably an existing traditional farm.

Address the provided design guidelines for what the design should and could potentially accomodate when maintain production and adding agritourism.

STEP 2

Further analyze the site.
Work with the existing site, create a spatial layout that allows for agriculture space, tourism/visitor space, and areas where both intersect.

Extra Step: Involve the surrounding community to be able to address other social, economic, and environemntal needs.

STEP 3

After outlining the site design re-address the design guidelines.

Additionally, conduct a self assessment with the provided metrics chart. Does the design have the ability to achieve these three main design pillars along with the subcategories?

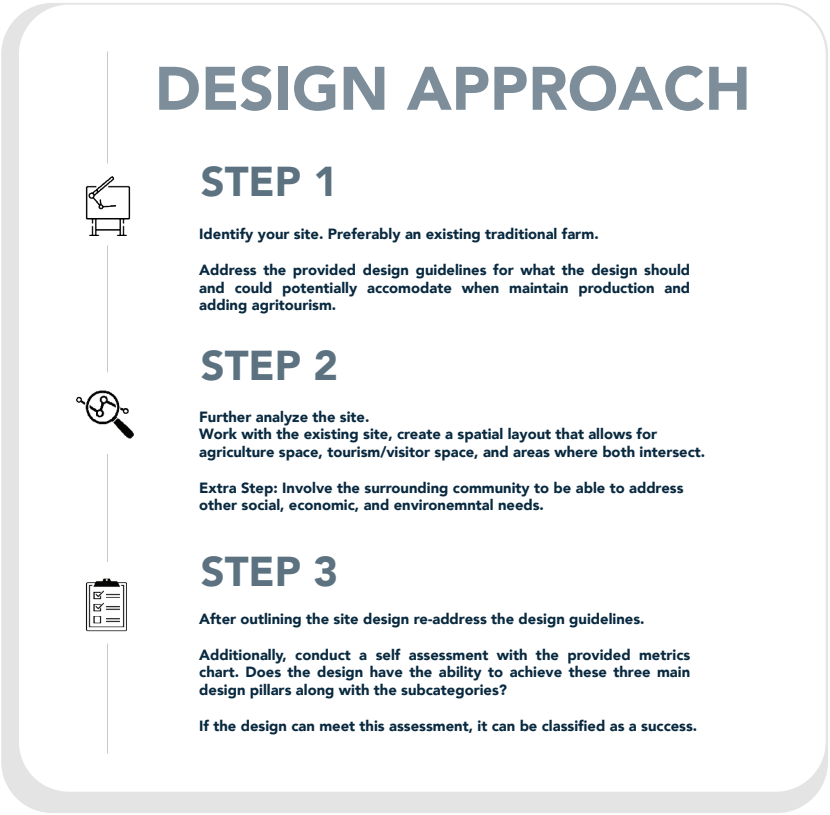If the design can meet this assessment, it can be classified as a success.

Figure 8.01
Research Process Contributions (Madsen 2021)

Step 3

The final step after creating a design is to conduct a self-assessment. The created metrics work as a checklist chart whereby assessing your design; you can explore how the implementations achieve these themes (See Figure 8.02). By completing the chart, the design can be classified as successful. It will provide food sharing, function as an agricultural operation, draw visitors in, and generate money to apply towards sustainable experimentation. The final and revised design following the process should result in achieving various benefits within the economic, environmental, and social categories.

ECONOMY	COMMUNITY	ENVIRONMENT
LOCAL FOOD SALE	CSA INVOLVEMENT	FOOD PRODUCTION
INCREASE LOCAL SPENDING	EDUCATIONAL	SCENIC QUALITIES
ADDITIONAL JOBS	RECREATIONAL	WATER CONSERVATION
MULTI-FUNCTION	RURAL TOURISM	CARBON AVOIDANCE
INCREASED FUNDING	COMMUNITY INVOLVEMENT	WASTE REDUCTION

Figure 8.02
Metrics Sheet For Use (Madsen 2021)

◀

Limitations of Study

As there is much uncertainty surrounding potential climate change impacts, the solutions we offer are just as indirect. We are constantly updating and finding new information with the future standings of our climate and its explorable solutions. When it comes to the field of agriculture there are many new opportunities still being discovered along with many other pairings and cultivating ideas to come from overlapping different practices and perspectives within our environment.

While in this report, I offer a design approach based on the literature and data I have collected. I only explored one design solution within the design application process that incorporated my site's specific attributes. In following my design approach there are potentially various other routes and design outcomes that could be chosen.

In conducting an in-depth data collection process issues such as time restrictions create a limit on the amount of survey responses I was able to incorporate, leading to a smaller sample size for data. This also lead to a smaller pool for the focus group participants. These steps were still successful in collecting information on each theme and more location specific information about the design application site. I managed a limited number of survey participants with the short time limit to ensure the information being collected was of quality not quantity. As a result of the survey participants being the focus group participant pool the small sample size limited the design review feedback I was able to receive. Although for the design application review, having site specific reviewers was more valuable than numerous reviewers with limited knowledge about sustainable agriculture and agritourism themes.

Overall in researching the fields of both sustainable agriculture and agritourism many factors could still be engaged. In looking at merging these fields through a broad scope I was only able to addressed the surface benefits in fusing practices. The report did not consider further crossovers for a money generating practice to support sustainable agriculture. The design could be made stronger if alternatives were considered and explored through multiple designs but was not possible due to time constraints. Innovation in the fields of sustainability and multi-functional agriculture are surfacing every day and will continue to advance with effort from both agriculture and design fields.

I believe that this research has the power to not only impact the research being conducting within the field of landscape architecture and the search for sustainable solutions to combat climate change, but this research has the potential to inspire more professional fields to collaborate. As a landscape architect, the report and process would potentially become most beneficial for other landscape architects or design involved professionals. However, this should not limit the report's potential to inspire and educate others about the issues we are soon to face with climate change and the effects that we could potentially see in the near future.

The hope is that this research can show other fields involved within the environment, such as agriculturalists and policymakers, can see the design process and call out what went well and what did not. By including these professionals in the design process, they could potentially feel more confident and inspired to be involved in further conceptual and design work. This step could result in further collaborations between various professional fields.

In times of social and environmental crisis, we will have to learn to work cooperatively to achieve new heights and make new strides within sustainable and innovative solutions. Now more than ever, it can be critical to get other professionals involved. When one field makes strides, the shared information can help create advances for other trades. This research looks at many projects, practices, and themes that work as successful examples of sustainability and agritourism working to bring numerous benefits into the design community achieving social, economic, and environmental success.

Overall this report provides evidence of successful adaptation towards sustainability in agriculture practices. This research is intended to be used towards future designs and could potentially lead to a change in the way we go about innovation. Agritourism along with sustainable practices can often be construed to be all or nothing operations. I believe this research can show how it can work on many scales and with different levels of adaption, creating more opportunities for implementation. None of the ideas are perfect, but each outcome is a suggestion towards meeting the end goal of sustainability.

As climate change continues to burden our society, we will have to continue looking at alternative solutions to find sustainable solutions in various aspects. The future professionals of the landscape architecture and even agriculture-centered fields should further engage the ideas of cross-collaboration.

Additional research could also include aspects beyond design. Being in the field of landscape architecture, my goal was to focus on a design that can solve the current issue, but at the end of the day, there will need to be a more in-depth circle of fields involved with the process.

Further collaboration between architects and agriculturalists should be nurtured along with new relationships between preliminary design and policymakers. To address these issues at the root, policymakers would need to be further involved in enacting policy-driven design solutions that can work and achieve success and benefits on various levels.

This research's design outcome has data-driven design elements to promote its potential to be successful in combating our global issues, including food instability, environmental degradation, rural economic foundation, and our social need for unity. The benefits of multi-functioning sustainable agriculture sites have been proven to be plentiful. To ensure this work does not go unnoticed, the research and interest for these fields should continue to be addressed through many different aspects, only beginning with design and policy.

Future studies should consider alternative ways to follow the design approach to test the metrics' outcome and relevance further. In my design application, the guides and metrics have been altered to address local and site-related issues and could be adjusted to fit more general conditions.

The design approach could be better tailored to fit projects beyond the traditional American farm in broader terms. Future research could address global farming methods along with other climate change-induced issues in suggestion with my design process to understand how the approach could play out under different circumstances.

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The final pages of the document consist of the additional referenced information. This shared information includes the literature references, literature map, IRB approval, glossary and terms, survey questions, and the focus group presentation.

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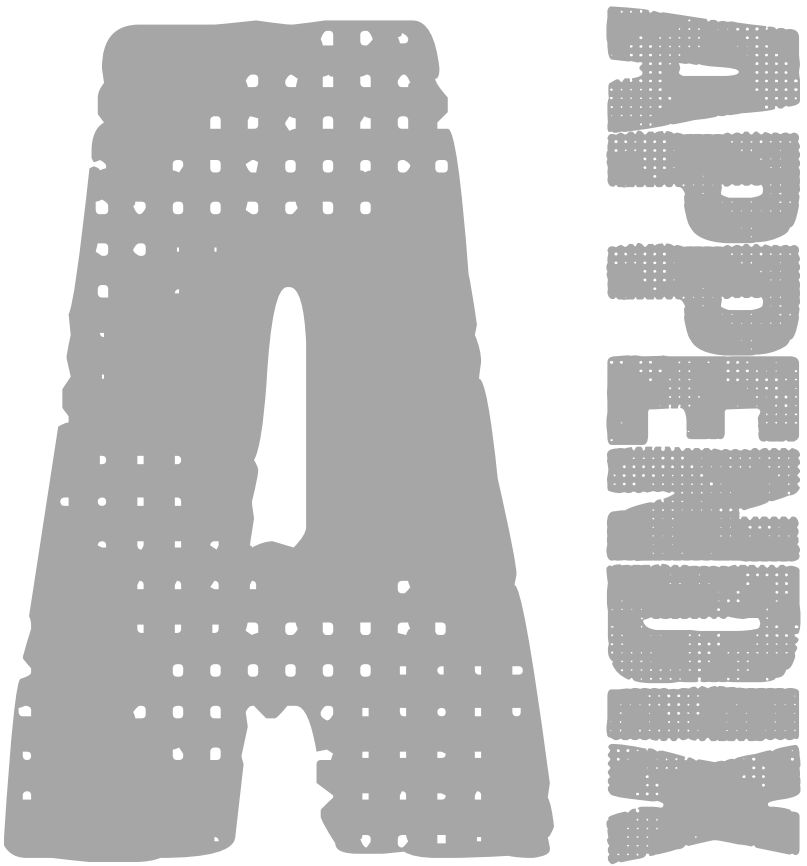
APPENDIX

APPENDIX
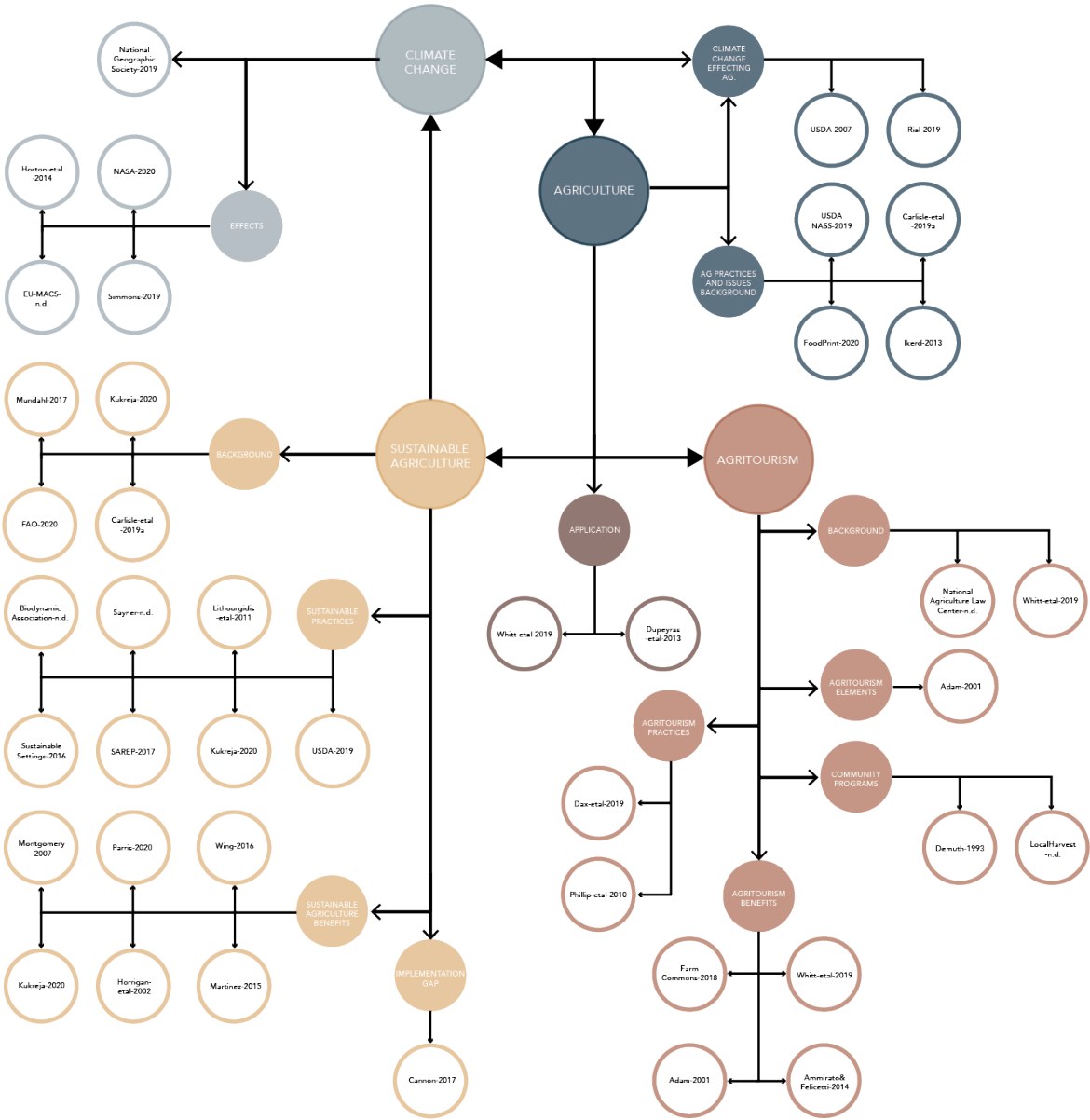
Figure 6.05
Literature Map
(Madsen 2020)

AGRITOURISM

A form of commercial enterprise that links agricultural production and/or processing with tourism in order to attract visitors onto a farm, ranch, or other agricultural business for the purposes of entertaining and/or educating the visitors and generating income for the farm, ranch, or business owner (National Agriculture Law-n.d.).

AGROFORESTRY

Agroforestry is a powerful tool for farmers of dry regions with soils susceptible to desertification. It involves the growth of trees and shrubs amongst crops or grazing land, combining both agriculture and forestry practices for long-lasting, productive, and diverse land use when approached in a sustainable way (See Figure 2.03). Trees also maintain the favorable temperature, stabilizes soils and soil humidity, minimizes nutrient runoff and protects crops from wind or heavy rain working to protect crops from external elements (USDA-2019).

BIODYNAMIC FARMING

Biodynamic farming often focuses on the diverse implementation of composting, the application of animal manure, cover cropping complementary crops for generating the necessary health and soil fertility for food production. Biodynamic practices can be applied to farms that grow a variety of produce, gardens, vineyards, and other forms of agriculture (Biodynamic Association-n.d.).

CONVENTIONAL FARMING

The use of seeds that have been genetically altered using a variety of traditional breeding methods, excluding biotechnology, and are not certified as organic (USDA-2015).

COVER CROPS

A crop grown for the protection and enrichment of the soil. (Dictionary.com)

CROP ROTATION

The practice of growing crops in succession on the same land preserving productive soil capacity (Dictionary.com)

CLIMATE CHANGE

Climate change is a long-term change in the average weather patterns that have come to define Earth's local, regional and global climates. These changes have a broad range of effects that are synonymous with the term (NASA-2020).

CONVENTIONAL AGRICULTURE

Also known as production agriculture, industrial agriculture, or traditional agriculture, conventional agriculture refers to farming systems that use industrial technology as a means to produce products for a global market at the lowest possible production price. Conventional agriculture typically uses genetically altered seeds and chemical fertilizers, pesticides, and herbicides rather than natural means of soil improvements and pest management. Practices also include heavy irrigation, intensive tillage, and mono-culture production (USDA 2015).

COMPARATIVE ANALYSIS

Comparative Study analyzes and compares two or more objects or ideas. Comparative studies are the studies to demonstrate ability to examine, compare and contrast subjects or ideas. Comparative study shows how two subjects are similar or shows how two subjects are different (Bukhari-2011).

DECARBONIZATION

The term decarbonization means the reduction of carbon. Its the conversion to an economic system that sustainably reduces and compensates the emissions of carbon dioxide (CO_2). The long-term goal is to create a CO_2-free global economy (VolkswagenAG-2020).

DIRECT CONTACT

Direct contact with agricultural activity indicates that agricultural activities are a tangible feature in the tourist experience (e.g. milking a cow; harvesting a crop) (Phillip-etal-2010).

INDIRECT CONTACT

Indirect contact indicates a secondary connection to agricultural activity within the tourist experience, perhaps through contact with agricultural produce (Phillip-etal-2010).

INDUSTRIAL AGRICULTURE

Is the large-scale, intensive production of crops and animals, often involving chemical fertilizers on crops or the routine, harmful use of antibiotics in animals (NRDC-2020).

INTERCROPPING

Involves the cultivation of two or more crops simultaneously on the same field (Engels-2016).

MULTI-FUNCTION LANDSCAPES

Multifunctional landscapes are typically characterized by diversified land use and complex landscape structure, thereby potentially covering many, often competing interests of different stakeholder groups (Holting-etal-2020).

NO TILL AGRICULTURE

No-till farming (also known as zero tillage or direct drilling) is an agricultural technique for growing crops or pasture without disturbing the soil through tillage (Spears-2018).

ORGANIC AGRICULTURE

A production system that sustains the health of soils, ecosystems, and people. It relies on ecological processes, biodiversity and cycles adapted to local conditions, rather than the use of inputs with adverse effects (IFOAM-2008).

PASSIVE CONTACT

Passive contact with agricultural activity indicates that tourism and agriculture are operated independently and the only commonality is the farm location (Phillip-etal-2010).

PERMICULTURE

Principles centered on utilizing resilient features in natural ecosystems. Using principles from regenerative agriculture, rewilding, and community resilience (Permaculture Research Institute-n.d.).

PLAUSIBILITY

Measure of quantity produced with a given quantity of inputs. Long term productivity growth reflects improvements in farmers' production efficiency and technological progress (Dictionary.com-2021).

PRODUCTIVITY

Productivity measures the quantity of output produced with a given quantity of inputs. Long term productivity growth reflects improvements in farmers' production efficiency and technological progress (DepartmentofAgriculture-2021).

SUSTAINABLE AGRICULTURE

Farming in sustainable ways, which means meeting society's present food and textile needs, without compromising the ability for current or future generations to meet their needs (USDA-2007).

KANSAS STATE | University Research
U N I V E R S I T Y | Compliance Office

TO: Dr. Timothy Keane   Proposal Number: 10333
        Landscape Architecture/Regional and Community Planning
        Seaton Hall

FROM: Rick Scheidt, Chair
        Committee on Research Involving Human Subjects

DATE: 12/11/2020

RE: Proposal Entitled, "Master's Project Report"

The Committee on Research Involving Human Subjects / Institutional Review Board (IRB) for Kansas State University has reviewed the proposal identified above and has determined that it is EXEMPT from further IRB review. This exemption applies only to the proposal - as written – and currently on file with the IRB. Any change potentially affecting human subjects must be approved by the IRB prior to implementation and may disqualify the proposal from exemption.

Based upon information provided to the IRB, this activity is exempt under the criteria set forth in the Federal Policy for the Protection of Human Subjects, **45 CFR §104(d), category: 2, subsection: ii.**

Certain research is exempt from the requirements of HHS/OHRP regulations. A determination that research is exempt does not imply that investigators have no ethical responsibilities to subjects in such research; it means only that the regulatory requirements related to IRB review, informed consent, and assurance of compliance do not apply to the research.

Any unanticipated problems involving risk to subjects or to others must be reported immediately to the Chair of the Committee on Research Involving Human Subjects, the University Research Compliance Office, and if the subjects are KSU students, to the Director of the Student Health Center.

SURVEYS

What Was Shared

APPENDIX

B
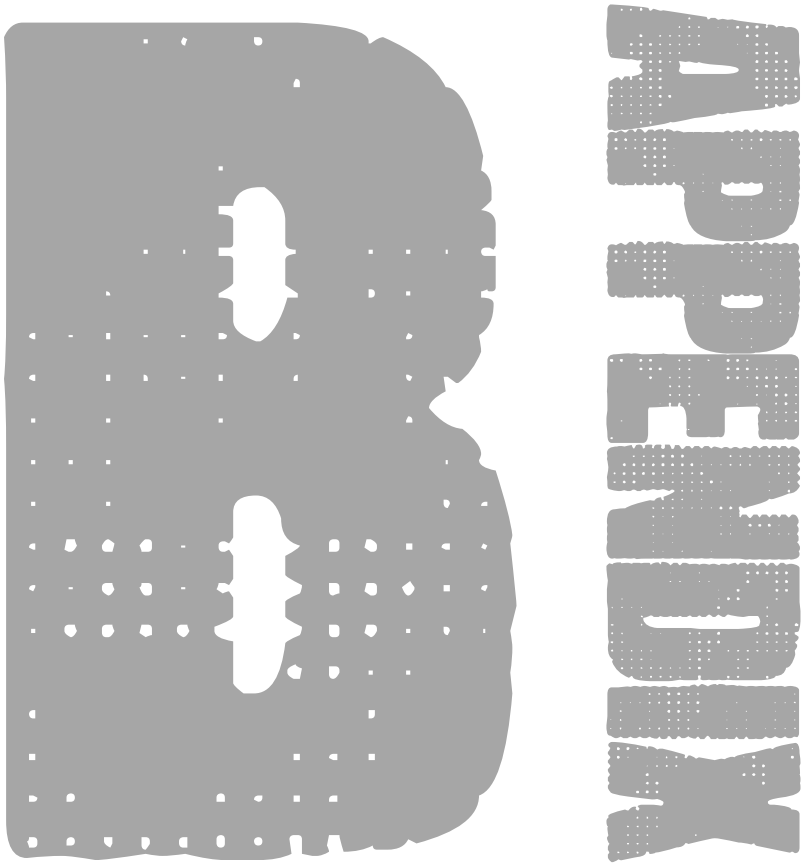
i.   **Kansas Agriculture Policy Makers**

Food For Future Thought

Understanding Sustainable Agritourism

Your participation will contribute to my understanding of preconceptions in both sustainable agriculture and agritourism practices.

Participation in this questionnaire is voluntary. All questions are open-ended, please answer to the extent of your comfort. Thank you for your participation!

1. How are you involved in the food system and how long have you been involved?

2. What is your definition of sustainable agriculture and its practices?

3. What are barriers for farmers/ranchers in implementing sustainable practices?

4. Are there current policies that encourage or discourage the adoption of sustainable farming practices?

◯ Yes

◯ No

If yes, what are the policies?

5. Are you familiar with CSA (Community Supported Agriculture)

◯ Yes

◯ No

If so, what is your opinion on its programs?

6. Are there issues or difficulties when working with the community in the field of agriculture?

◯ Yes

◯ No

If Yes, Please specify

7. What is your opinion on agritourism practices?

8. What are barriers for farmers/ranchers in implementing agritourism practices?

9. What do you feel the community has in place or should have in place to promote sustainable agritourism development?

10. Would you be willing to participate in an additional (10 minute) agritourism park design/plan review for a site in Wyandotte County?

◯ Yes

◯ No

Best way to contact you?

ii.   **Agritourism Involved Kansas Farmers**

Food For (Future) Thought

Understanding Sustainable Agritourism

Your participation will contribute to my understanding of preconceptions in both sustainable agriculture and agritourism practices.

Participation in this questionnaire is voluntary. All questions are open-ended, please answer to the extent of your comfort. Thank you for your participation!

1. What type of farm/ranch do you operate and how long have you been involved?

2. What is your definition of sustainable agriculture and its practices?

3. How or what do you do to improve economic sustainability, environmental sustainability, and social sustainability?

4. What are barriers for farmers/ranchers in implementing the sustainable practices?

5. How do you market your products and where do you sell them? How is the price determined?

6. Are you familiar with CSA (Community Supported Agriculture)?

○ Yes

○ No

If yes, Are there issues or difficulties when working with the community in the field of agriculture? Please explain.

7. What is your opinion on agritourism practices?
Do you believe there are benefits of visitors on the farm? Do you believe there are barriers?

8. What do you feel the community has in place or should have in place to promote sustainable agritourism development?

9. Do you believe transitioning from traditional farming to agritourism farming could generate the needed money for farmers to switch to more sustainable practices?

○ Yes

○ No

Please explain?

10. Would you be willing to participate in an additional (10 minute) agritourism park design/plan review for a site in Wyandotte County?

○ Yes

○ No

Best way to contact you?

iii. **Traditional Kansas Farmers**

Food For (Future) Thought

Understanding Sustainable Agritourism

Your participation will contribute to my understanding of preconceptions in both sustainable agriculture and agritourism practices.

Participation in this questionnaire is voluntary. All questions are open-ended, please answer to the extent of your comfort. Thank you for your participation!

1. What type of farm/ranch do you operate and how long have you been involved?

2. What is your definition of sustainable agriculture and its practices?

3. How or what do you do to improve economic sustainability, environmental sustainability, and social sustainability?

4. What are barriers for farmers/ranchers in implementing the sustainable practices?

[_____]

5. How do you market your products and where do you sell them?

[_____]

6. Are you familiar with CSA (Community Supported Agriculture)

○ Yes

○ No

If so, are there issues or difficulties when working with the community in the field of agriculture?

[_____]

7. What is your opinion on agritourism practices? What are barriers for farmers/ranchers in implementing agritourism practices?

[_____]

8. What do you feel the community has in place or should have in place to promote sustainable agritourism development?

[_____]

9. Do you believe inviting visitors to agriculture land could be disruptive or counterproductive?

○ Yes

○ No

Please explain.

[_____]

10. Would you be willing to participate in an additional (10 minute) agritourism park design/plan review for a site in Wyandotte County?

○ Yes

○ No

Best way to contact you?

[_____]

Food For (Future) Thought

Understanding Sustainable Agritourism

Your participation will contribute to my understanding of preconceptions in both sustainable agriculture and agritourism practices.

Participation in this questionnaire is voluntary. All questions are open-ended, please answer to the extent of your comfort. Thank you for your participation!

1. Do you actively support local Wyandotte County farms through community supported agriculture groups?

○ Yes

○ No

Please explain.

[_____]

2. Do you actively support Wyandotte county tourism by visiting local attractions?

○ Yes

○ No

Please explain.

[_____]

3. Is locally produced food easily accessible within your neighborhood?

○ Yes   ○ Rarely

○ Somewhat   ○ No

○ Neutral

4. If you had an agriculture park located within your community, would you visit regularly?

○ Yes

○ No

Please explain

[_____]

5. Would you be more inclined to buy local produce if you could visit and see how it is produced?

○ Yes

○ No

6. How do you think a sustainable agritourism park would affect the community?

[   ]

7. Are there currently any agriculture support programs within Wyandotte County?
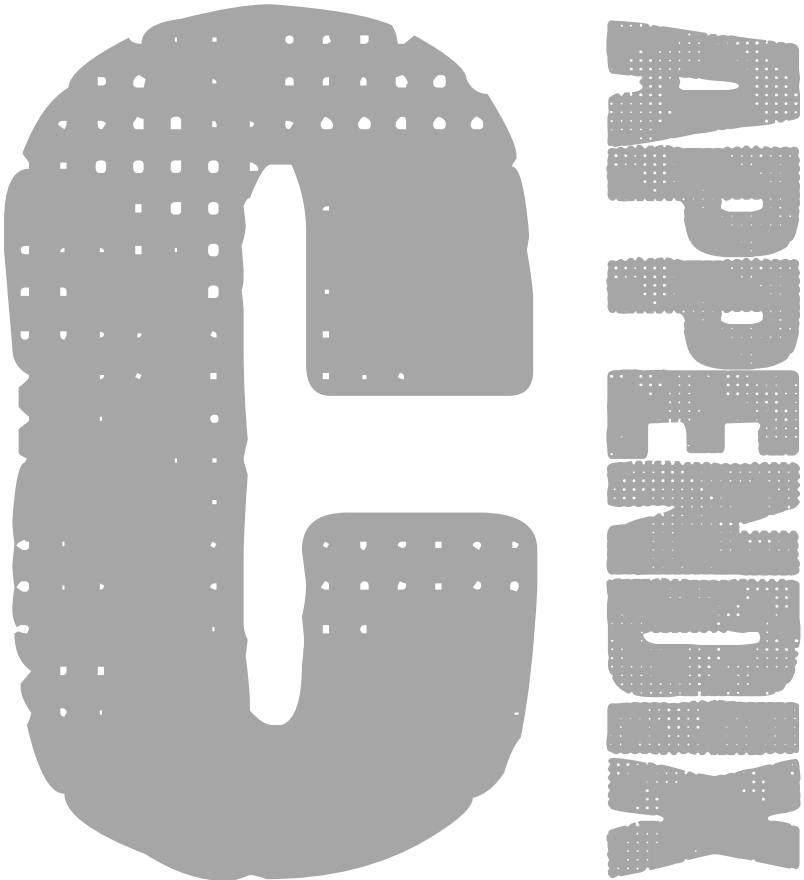
○ Yes

○ No

○ Unsure

If Yes, are you/have you been involved?

[   ]

8. Would you be willing to participate in an additional (10 minute) agritourism park design/plan review for a si in Wyandotte County?

○ Yes

○ No

Best way to contact you?

[   ]

FOCUS GROUP

What Was Shared

APPENDIX C

what to expect

IRB OPENER

I will not use any direct data or quotes from this focus group. All information will be analyzed and applied towards my final design and metrics. The zoom meeting will be recorded for my own personal reference but will be deleted when my research is complete.

STRUCTURE

I will start the meeting with sharing 10 minutes of my research process and design outcome. At the end I have questions to pose to the group only after you all have shared questions or suggestion if you have them.

I mainly want to get suggestions and feedback for the direction my design is headed. In addition understand the plausibility of the design I am offering as a solution.

Any comments or questions would be helpful so please feel free to share or even drop something in the chat when you think of it. Thanks lets get started!

purpose

PURPOSE

The purpose of this research will be to inform current farmers of the multi purpose functions of farms that can not only contribute to decarbonizing but also offer ways to implement agritourism that can generate additional income to help influence the farmers ability to switch to other sustainable practices.

GOALS

The goals of my research and design will be to:

1. Produce design programming and guidelines to be applied to a comprehensive design.
2. Spatially express how sustainable agriculture and agritourism practices can merge to create a highly beneficial farming operation.
3. Generate metrics for the applied design to understand the potential economic, environmental, and social benefits of the design.

EMBRACING SUSTAINABILITY IN A NEW WAY

dilemma

CLIMATE CHANGE

The National Climate Assessment report projected that warming temperature, rising heat, major drought, wildfire, and extreme storms events will increasingly disrupt agricultural productivity and create a threat to our food security, quality, and price stability (Simmons-2019).

CURRENT STANDINGS

Our current dependence on heavy plowing machinery, fossil-fuel usage, and chemicals such as fertilizers and pesticides have made significant negative contributions to climate change (Rial-2019).

Negative impacts include; a decline in soil productivity, an increase in water pollution and water scarcity, plus an increase in insects and pests that will be more resistant to pesticides (USDA-2007).

FINDING A SOLUTION

Pressing times can make it hard to offer long term solutions that are beneficial to categories such as environmental, economic, and social but what if we could establish new practices and lead a new path to sustainability without having to compromise any of the categories. I want to know if sustainable agriculture could become more obtainable through the introduction of agritourism? In addition, understand the benefits we could see from this implementation?

FALLING INTO THE TRAP

literature summary

LITERATURE TAKEAWAY

Current climate change and agriculture practices have been contributing to the dilemma harming our environment. Sustainability is constantly being outlined as the answer but is to easily achievable. I found that combining the practices of agritourism and sustainable agriculture we can achieve many sought after benefits.

LITERATURE APPLICATION

- Overall the research process has shown how sustainable agriculture and agritourism will work to benefit each other.

- Sustainable agriculture can help bring an extra draw to agritourism with educational factors.

- In contrast, agritourism can allow the switch to sustainability by providing a secondary income to support the farmer's when there is a pause in production.
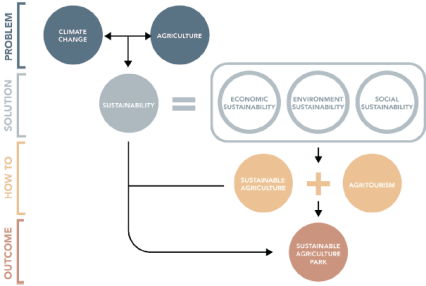
design guidelines

GUIDELINE PURPOSE

These guidelines can be used as a checklist to compare project designs of a similar typology to the program elements to understand if it covers the basis for "success".

In this case we can say these projects function the way they were intended to meaning they were a success and we can help outline the means to reach the same goals for other projects through these determined design guidelines.

The following guidelines are not set rules. Rather, they are simply meant to inform design decisions when it comes to programming for sustainable agriculture function and tourism involvement.

CATEGORIES

- Sociability
- Uses + Activities
- Access
- Governance
- Economy

SOCIABILITY	Create moments of intersection for all types of visitors (overnight stay, one-time visitor, community member).	Position the agriculture close for users to observe, but far enough away to main purposeful crop production without disruption.	Draw attention to food production. Bringing rec. paths and public space to the agriculture land can help further engage the community.	Install educational signage to inform users of the new or sustainable practices the farm in adapting.
ACTIVITIES	Integration of unique feature such as historic lodging or land art can create more opportunities for photography and attract more users.	Encourage organized, special events in tourist dedicated spaces on site as it will garner public support. Events include but are not limited to:	a. Live entertainment c. Educational talks d. Cooking classes (include local produce) e. Happy hours f. Fishing events	Provide comfortable and varied seating that can accommodate special events, as well as a myriad of recreational activities.
ACCESS	Agriculture production should be close to visitor for full immersion of practices and education opportunities.	Easy acess for locals to maintain fresh food access by walking.	The site should be located within an existing farm with a rural community for support. In addition, the site ideally has significant rural scenery.	Create areas inclusive for all levels of ability. (Old and Young)
GOVERNANCE	Involve community supported programs or initiatives. This can increase awareness of sustainable agritourism practices.	Create and maintain a popular attraction. This can boost local job creation.	The owner must be able to provide consistent funding for on going maintenance and events the tourism might bring.	Allow agritourism events to be open to the public year-round.
ECONOMY	Implementing tourism practices before sustainable practices will generate money to transition towards safe agriculture practices.	Having a local owner to improve local spending and economy.	Maximize the education and visitor friendly aspects. The design will receive better partnerships and funding from schools or third parties.	Market on site. Shop or sale area for visitors to purchase product.

design statement

GOALS

The goals are to spatially express how sustainable agriculture and agritourism practices can merge to create a highly beneficial farming operation and understand the economic, environmental, and social/community benefits the design could potentially have.

DESIGN PURPOSE

The purpose of this design will be to inform current farmers of the multi purpose functions of farms that can not only contribute to decarbonizing but also offer ways to implement agritourism that can generate additional income to help influence the farmers ability to switch to other sustainable practices.

Creating a multipurpose agricultural design can show the true extent of farmland productivity and become a future example of complete sustainable agriculture design.
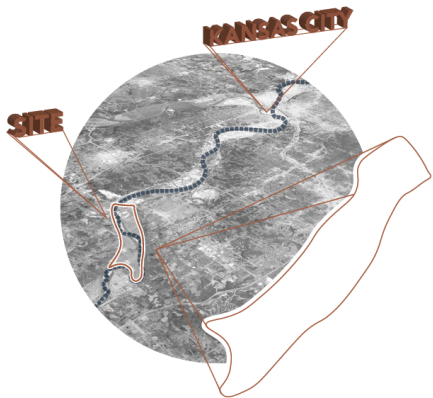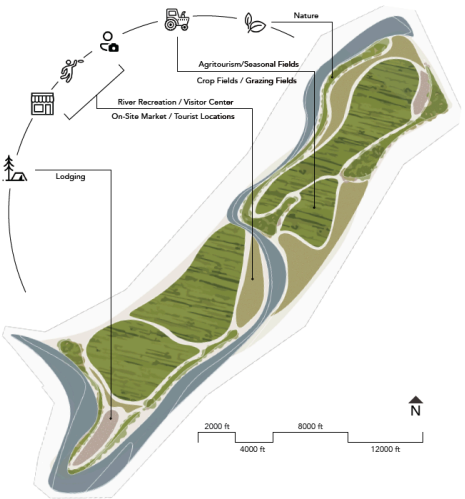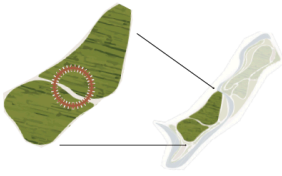

site

SELECTION

A selected site in Wyandotte/Johnson County, Kansas is an existing farm and can be the example showing how a traditional farm can be transformed into a multi-functional sustainable agriculture attraction.

In addition the site can be used to re-define the meaning of sustainability.

EXISTING SITE

The site is 2,762 acres along the Kansas river corridor. The site is located in a food desert connecting Bonner Springs and De Soto, the site is also in close proximity to a camping attraction called Lake of the Forest.

The site offers a variety of opportunity and if designed properly could change the way the community operates.


phase 1

MAINTAINING PRODUCTIVITY

As you move to the lower half of the plan the design becomes more meditative. In crossing the river the design should have a quiet and rural feel to it. Moving south the farm fields will become more serious production and will be the main farm focus including corn and soybeans.

In moving away from the tourism and park-like attractions of the site, people who are looking to get away will have a spot. With lodging and midwest views the natural features of the site such as the river will take precedence.
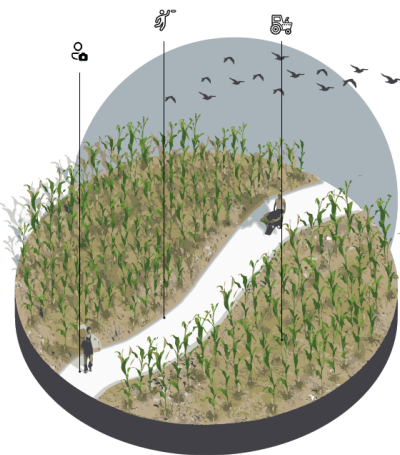
phase 2
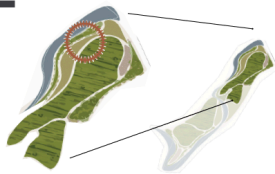
LOCAL ATTRACTIONS

The upper (north eastern) left field is dedicated to grazing. Introducing cows and horses to roam 400 acres (over 2 acres per cow) of land, all where visitors can see and interact with them. As cows can be used for produce for milk and cheese, horses can contribute to tourism for riding lessons or site tours.

The lower right (south eastern) field is dedicated to agritourism production such as pumpkins. Creating an area where visitors have close access to interactive farming. Keeping visitors near entries and accommodations to delineate spaces.

phase 3
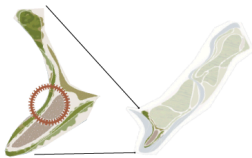
IMMERSIVE EXPERIENCE

The lower portion of the site as mentioned before is designed for immersion. This location was specifically selected for lodging, campsites, and visitor accommodations due to its proximity to existing nature and the Kansas River. In addition there is a major recreation trail connecting this location to De Soto south of the site and Bonner Springs through and to the north of the site.

Making this attraction more accessible and opportune. The contrast between the areas of the top and bottom will appeal to the different needs for the site and want for various activities.
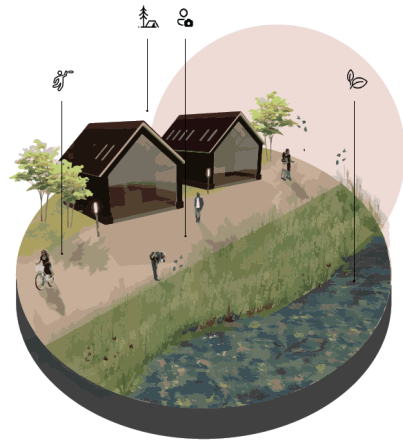
assessing design

PERSONAL REVIEW

By running the design past a set of metrics, I was able to suggest what the design (when implemented) could achieve. The projected design was able to meet each category through a design implementation element or a community organized program. This measures that the design could achieve in providing benefits within each of the overarching categories of economy, community, and environment.

Economy : Jobs
This section of the metrics pertains to the designs ability to fund sustainable agriculture through the use of agritourism.

Community : Justice
This category addresses the social issues of community values and providing food in an area in need (one design cannot address all social issues).

Environmental : Decarbonization
The environment category acknowledges the sustainable aspects of the design and how it improves upon the sites surrounding nature.

ECONOMY	COMMUNITY	ENVIRONMENT
LOCAL FOOD SALE The design has an on site market to sell local/on-site produce to community.	**CSA INVOLVEMENT** Promotes awareness for local Wyandotte county food initiative and organizations.	**FOOD PRODUCTION** Still produces food while practicing sustainable methods.
LOCAL SPENDING Bringing visitors and community members to the site as an attraction to generate income.	**EDUCATIONAL** Provides opportunities for learning and immersive experiences within the natural/agriculture setting.	**SCENIC QUALITIES** The design enhances the rural scenery through creating views in and out of the site.
JOB CREATION Brings more events and programming to the area. The site would generate numerous jobs.	**RECREATIONAL** Includes open green space for people to utilize for community gathering space.	**WATER CONSERVATION** The design works to irrigate and recirculate water within the site.
MULTI-FUNCTION Combines farm, park, and tourism elements all into one site to create the ultimate attraction.	**CULTURAL PRESERVATION** Raises awareness for culturally significant events in proximity to the site.	**CARBON AVOIDANCE** Producing food locally to limit the need for transporting goods elsewhere.
TAX BENEFITS Generating more income from tourism and moving away from fertilizer and farming related taxes.	**JUSTICE - SOCIAL VALUE** Design promotes health in influencing people to experience the landscape and socialize with community.	**WASTE REDUCTION** Site management practices that encourage recycling.

discussion

design

1. Did you have initial thoughts about the design outcomes? Is the design I propose plausible?

2. Are there any important factors in a sustainable agritourism farm my design did not address?

3. Are there more areas that should be designated for tourism or farmers that would have to implemented?

measures

4. Do the design guides categories address the needs of a sustainable agritourism site?

5. What do you think of the metrics? Do the categories address the range of benefits a project like this could have?

broad discussions

6. Do you think that agritourism can generate the money to support sustainability?

7. Do you believe agritourism is worth the hassle to gain the potential benefits?

8. Is agritourism an easy thing to adapt or implement within your farm or is it just as hard as the farming operation itself?