

Cultivating the future: a vision for Willow Lake Student Farm

by

Carter Brown

A REPORT

submitted in partial fulfillment of the requirements for the degree

MASTER OF LANDSCAPE ARCHITECTURE

Department of Landscape Architecture and Regional & Community Planning
College of Architecture, Planning & Design

KANSAS STATE UNIVERSITY
Manhattan, Kansas

2025

Approved by:

Major Professor
Lee R. Skabelund

Copyright

© Carter Brown 2025.

Abstract

The disconnect between people and the environment, along with food insecurity issues, has caused a growing need for proper agricultural education and training opportunities. University campus farms are great examples of spaces where students and visitors can engage with both agriculture and their environment. At Kansas State University's Willow Lake Student Farm there is a great opportunity to create the premier student farm that serves as a model for sustainable agriculture. This project aims to explore the many agricultural opportunities available and provide a plan to develop a premier student farm experience at Willow Lake Student Farm. This report examines the background and importance of sustainable and regionally-focused agricultural education, discusses the research methods used, evaluates five farm precedent sites and summarizes three key interviews used to gather information, and present a conceptual master plan for Willow Lake Student Farm.

CULTIVATING THE FUTURE:

A VISION FOR WILLOW LAKE STUDENT FARM



Aerial view of Willow Lake Student Farm (Littlefield 2024).

Carter Brown
Master's Report | 2025
Landscape Architecture
Kansas State University

Abstract

The disconnect between people and the environment, along with food insecurity issues, has caused a growing need for proper agricultural education and training opportunities. University campus farms are great examples of spaces where students and visitors can engage with both agriculture and their environment. At Kansas State University's Willow Lake Student Farm there is a great opportunity to create the premier student farm that serves as a model for sustainable agriculture. This project aims to explore the many agricultural opportunities available and provide a plan to develop a premier student farm experience at Willow Lake Student Farm. This report examines the background and importance of sustainable and regionally-focused agricultural education, discusses the research methods used, evaluates five farm precedent sites and summarizes three key interviews used to gather information, and present a conceptual master plan for Willow Lake Student Farm.

Acknowledgments

I would like to express my gratitude to the individuals who have contributed to the success of this project and to my journey at K-State.

First, I would like to thank my major professor and committee members, Professor Lee Skabelund, Professor Howard Hahn, and Dr. Nellie Hill, for their guidance, expertise, and support throughout this past year. Your feedback and encouragement have pushed me to create a project that I am proud of.

A special thank you to Andrew Littlefield for his collaboration and working alongside me throughout much of this project. Your willingness to provide essential resources has played a major role in bringing this project to life.

To my family, thank you for your continued support over these past five years. A special thanks to my parents for instilling a passion for K-State in me from the start, and for raising me to be a lifelong Cats fan. Your love and encouragement have helped shape who I am today. I would also like to thank my girlfriend, Jaimie, for her patience, support, and encouragement throughout this entire process.

I would also like to show appreciation to my studio for the many memories over the years. I will always cherish the friendships we made.

Lastly, I would like to thank Kansas State University for providing me with some of the best years of my life. Although there have been challenging moments, I wouldn't have wanted to be anywhere else in the world.

Thank you all for helping me reach this point.

Table of Contents

List of Figures	VI
Chapter 1: Introduction	01
Chapter 2: Background	11
Chapter 3: Methods	33
Chapter 4: Findings	43
Chapter 5: Conceptual Master Plan	81
Chapter 6: Conclusion	139
References	143
Appendices	149

List of Figures

Cover

Aerial view of Willow Lake Student Farm (Littlefield 2024).

Chapter 1: Introduction

- Figure 1.1: High tunnel at Willow Lake Student Farm (Skabelund 2024).
- Figure 1.2: Location map. Created with Adobe Illustrator (Brown 2025).
- Figure 1.3: Underutilized open space southeast of the farm yard (Skabelund 2024).
- Figure 1.4: Overgrown vegetation at farm entrance (Skabelund 2024).
- Figure 1.5: Lack of storage space to protect equipment (Skabelund 2024).

Chapter 2: Background

- Figure 2.1: Literature review diagram (Brown 2025).
- Figure 2.2: Aerial view of Willow Lake Student Farm looking back towards Manhattan, Kansas (Littlefield 2024).
- Figure 2.3: Educational farm tour at Piccalilli Farm (Skabelund 2024).
- Figure 2.4: Student work experience at Willow Lake Farm (Littlefield 2024).
- Figure 2.5: Signage kiosk in the Willow Lake Farm yard (Skabelund 2024).
- Figure 2.6: Signage kiosk at the Willow Lake Farm hügelkultur research plots (Skabelund 2024).
- Figure 2.7: Willow Lake Farm production garden plot in the fall (Littlefield 2024).
- Figure 2.8: Willow Lake Farm high tunnel construction (Littlefield 2024).

Chapter 3: Methods

- Figure 3.1: Methods overview diagram (Brown 2025).
- Figure 3.2: Precedent site locations map. Created with Adobe Illustrator (Brown 2025).

Chapter 4: Findings

- Figure 4.1: University of Michigan Campus Farm context map. Created with Adobe Illustrator (Brown 2025).
- Figures 4.2 - 4.6: University of Michigan Campus Farm images (Skabelund 2022).
- Figure 4.7: Tucson Village Farm context map. Created with Adobe Illustrator (Brown 2025).
- Figures 4.8 – 4.12 Tucson Village Farm images (Tucson Village Farm 2025).
- Figure 4.13: U.C. Davis Student Farm context map. Created with Adobe Illustrator (Brown 2025).
- Figures 4.14 – 4.18: U.C. Davis Student Farm images (UC Davis Student Farm, March 14, 2025, <https://asi.ucdavis.edu/programs/sf>).
- Figure 4.19: Cedar Circle Farm context map. Created with Adobe Illustrator (Brown 2025).
- Figures 4.20 – 4.22 & 4.24: Cedar Circle Farm images (Cedar Circle Farm and Education Center, March 14, 2025, <https://cedarcirclefarm.org/>).
- Figures 4.23: Cedar Circle Farm produce stand (Photo Courtesy of Cedar Circle Farm and Education Center. © Ben Deflorio).
- Figure 4.25: Chatfield Farms context map. Created with Adobe Illustrator (Brown 2025).
- Figures 4.26 – 4.30: Chatfield Farms images (Photos Courtesy of Denver Botanic Gardens. © Scott Dressel-Martin).

Chapter 5: Conceptual Master Plan

Figure 5.1: Aerial view of Willow Lake Student Farm (Littlefield 2024).

Figure 5.2: State Park Context Map. Created with Adobe Illustrator (Brown 2025).

Figures 5.3 – 5.6: Aerial imagery of the farm site through time (Google Earth 2025).

Figures 5.7 – 5.9: Willow Lake Student Farm existing conditions (Skabelund 2024).

Figure 5.10: Willow Lake Student Farm existing entry (Skabelund 2025).

Figure 5.11: Willow Lake Farm site analysis diagram. Created with Adobe Illustrator (Brown 2025).

Figures 5.12 & 5.13: Tuttle Forestry existing conditions (Skabelund 2024).

Figure 5.14 & 5.15: Willow Lake and nearby campground (Brown 2023).

Figure 5.16: Context analysis diagram. Created with Adobe Illustrator (Brown 2025).

Figure 5.17: Aerial rendering of overall Willow Lake Student Farm. Created with SketchUp and Lumion (Brown 2025).

Figure 5.18: Administrative oversight diagram (Brown 2025).

Figure 5.19: Willow Lake Farm master plan rendering. Created with SketchUp, Lumion, and Adobe Photoshop (Brown 2025).

Figure 5.20: Willow Lake Farm site plan rendering. Created with SketchUp, Lumion, and Adobe Photoshop (Brown 2025).

Figure 5.21: Before - aerial view of farm looking towards Willow Lake (Littlefield 2024).

Figure 5.22: After - aerial rendering of farm looking towards Willow Lake. Created with SketchUp and Lumion (Brown 2025).

Figure 5.23: Before - aerial view of farm looking south. (Littlefield 2024).

Figure 5.24: After - aerial rendering of farm looking south. Created with SketchUp and Lumion (Brown 2025).

Figure 5.25: Image of Willow Lake Farm yard. (Skabelund 2024).

Figure 5.26: Aerial rendering of the yard and farm. Created with SketchUp and Lumion (Brown 2025).

Figure 5.27: Aerial rendering of the yard gathering space. Created with SketchUp and Lumion (Brown 2025).

Figure 5.28: Image of the current bee hives (Skabelund 2024).

Figure 5.29: Aerial rendering of the new education space. Created with SketchUp and Lumion (Brown 2025).

Figure 5.30: Aerial rendering of the pollinator meadow. Created with SketchUp and Lumion (Brown 2025).

Figure 5.31: Aerial rendering of farm showing enhanced spaces. Created with SketchUp and Lumion (Brown 2025).

Figure 5.32: Aerial rendering of farm overlooking new education center and livestock facilities. Created with SketchUp and Lumion (Brown 2025).

Figure 5.33: Aerial rendering of farm showing the enhanced garden plots and added amenities. Created with SketchUp and Lumion (Brown 2025).

Figure 5.34: Rendering of information/map kiosk. Created with SketchUp and Lumion (Brown 2025).

Figure 5.35: Rendering of educational signage. Created with SketchUp and Lumion (Brown 2025).

Figure 5.36: Signage diagram. Created with Adobe Illustrator (Brown 2025).

Figure 5.37: Sustainability diagram. Created with Adobe Illustrator (Brown 2025).

Figure 5.38: Phasing diagram. Created with Adobe Illustrator (Brown 2025).

INTRODUCTION

Introduction

Agriculture is essential in providing food for the world and sustaining the human population. There is a growing disconnect between people and their environment causing a lack of knowledge of where food comes from. Having knowledge of where food comes from and how it is grown can create opportunities for people to better connect with the environment and their community. University campus farms provide the essential setting for agricultural education and broader community impact. At Kansas State University's Willow Lake Student Farm there is a great opportunity to develop the farm into the premier student farm that serves as a model for sustainable and regionally-focused agriculture and aligns with the goals and mission of the university.

Landscape architects have the ability to create spaces that are used to promote environmental and agricultural education. One of the main goals of landscape architecture is to create enjoyable and healthy spaces for people to experience. Creating these spaces to be beneficial for both people and the environment is also a primary goal of the profession. University agricultural spaces are the perfect example of this and can be designed for a more efficient farming and research operation while enhancing the surrounding ecological systems. This can be done while also providing opportunities for visitors to connect with the land through recreation, education, and a hands-on experience.



Figure 1.1: High tunnel at Willow Lake Student Farm (Skabelund 2024).

Project Context: Willow Lake Student Farm

Willow Lake Student Farm is located five miles northeast of K-State's main campus and is situated within Tuttle Creek State Park. The student farm has been a part of K-State since 2008, since being started by Dr. Rhonda Janke and K-State alumni Lani Meyer (KSU Horticulture and Natural Resources - Willow Lake Student Farm). Between 2018 and 2025 Willow Lake Student Farm was directed by Jeremy Cowan. The property the farm sits on is leased by the Department of Horticulture and Natural Resources and is around 85 acres with a large portion being dedicated for forestry research and a small portion being fenced off for the farm. Since its inception, Willow Lake Student Farm has grown to around 7 acres in size and currently provides research opportunities for students, has a working CSA program, and hosts community members for visitor events and workshops. It has steadily developed throughout the years but lacks active programming and educational opportunities to attract and maintain interaction with visitors, school groups, and researchers. The farm has a mission and vision statement that aims to help guide the farm's future direction but lacks a developed plan to help envision what the farm can become.

Farm Mission and Vision Statements

"Our mission is to be a living laboratory for sustainable agriculture research, education, and outreach, while providing the K-State campus-community with fresh, local produce" (Willow Lake Student Farm).

"Our vision is to position the Willow Lake Student Farm as the premier small- to mid-scale, diversified farm research and training center in the Midwest. We focus on sustainable production of diversified specialty crops and building community through agriculture" (Willow Lake Student Farm).

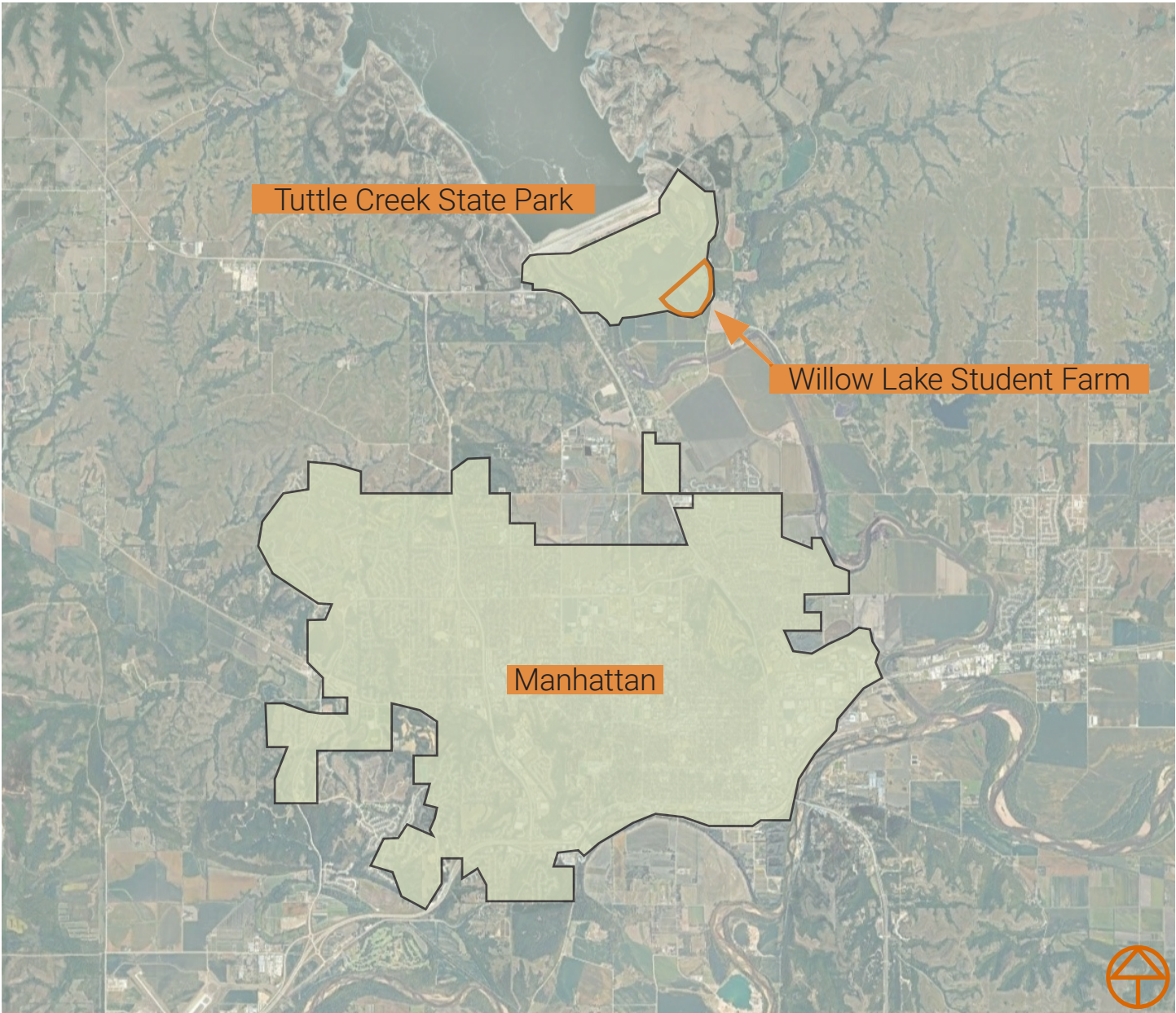


Figure 1.2: Location map. Created with Adobe Illustrator (Brown 2025).

Dilemma

The mission and vision of K-State's Willow Lake Student Farm is to be a space for education and outreach and to become a premier diversified farm research and training center in this region of the United States (KSU Horticulture and Natural Resources - Willow Lake Student Farm). The existing conditions of the farm are not currently able to achieve this goal. The lack of access, site organization, visitor and student opportunities, farm diversification, and proper university and community connections holds the farm back from achieving its goals. Willow Lake Student Farm has steadily evolved over the years and with a change in departmental leadership and a somewhat unknown future it needs a bold, strategic, and forward looking plan to help guide its future development and continued impact with the K-State and broader community.



Figure 1.4: Overgrown vegetation at farm entrance (Skabelund 2024).



Figure 1.3: Underutilized open space southeast of the farm yard (Skabelund 2024).



Figure 1.5: Lack of storage space to protect equipment (Skabelund 2024).

Research Question

How can Willow Lake Student Farm be redeveloped to promote sustainable agriculture education and ensure its lasting impact with K-State and the broader community?

Objective

The main objective of this project is to provide users and decision makers of Willow Lake Student Farm with a designated plan and recommendations to help guide the future of the farm. The goals of bringing more awareness to the farm, creating a space for agricultural research and education, and working towards the farm’s mission and vision were also priority with this project. It was important to first explore the background of the topics of agricultural education, outdoor learning, visitor experience, and farm operations and management. Completing precedent analyses for five farm sites and three interviews also helped in understanding what strategies work well in creating a successful university farm.

Project Goals

1. Provide guidance for the future development and enhancement of WLSF.
2. Bring more awareness to the importance of WLSF and its operations to ensure its long-term success and relationship with the university.
3. Create a space that promotes the education on sustainable agriculture and healthy food systems.
4. Create a conceptual master plan that, when completed, achieves the goals of becoming the premier small to mid-scale diversified farm in the Midwest.

BACKGROUND

Glossary

Agricultural Education

The term agricultural education refers to the learning and participation of agricultural practices and concepts in a primarily outdoor setting. Agricultural education is all about opportunities to learn about the food system and the natural human need for sustenance and security (Williams and Brown 2012a).

Outdoor Learning

Outdoor interactive learning capitalizes on opportunity to include hand-on experiences and the natural world with education programs. “Outdoor education is an ‘umbrella’ concept for multiple forms of teaching, with the common feature of being undertaken outdoors, outside of school buildings” (Svobodova 2019, 14).

Visitor Experience

Providing a successful experience requires many elements to help raise awareness on sustainable agricultural topics. Using the principle of agritourism can help provide a successful farm experience. “Agritourism is a human tourist activity whose aim is to familiarize the visitor with farming activity and recreation in an agricultural environment” (Sznajder 2009b, 54).

Operations and Management

Farm operations and management refers to the factors that keep a campus farm running. Daily farm operations and as well as higher up management are essential in maintaining a successful campus farm. A better understanding of farm operations and management allows for a better education experience for students and visitors (Leis et al. 2011).

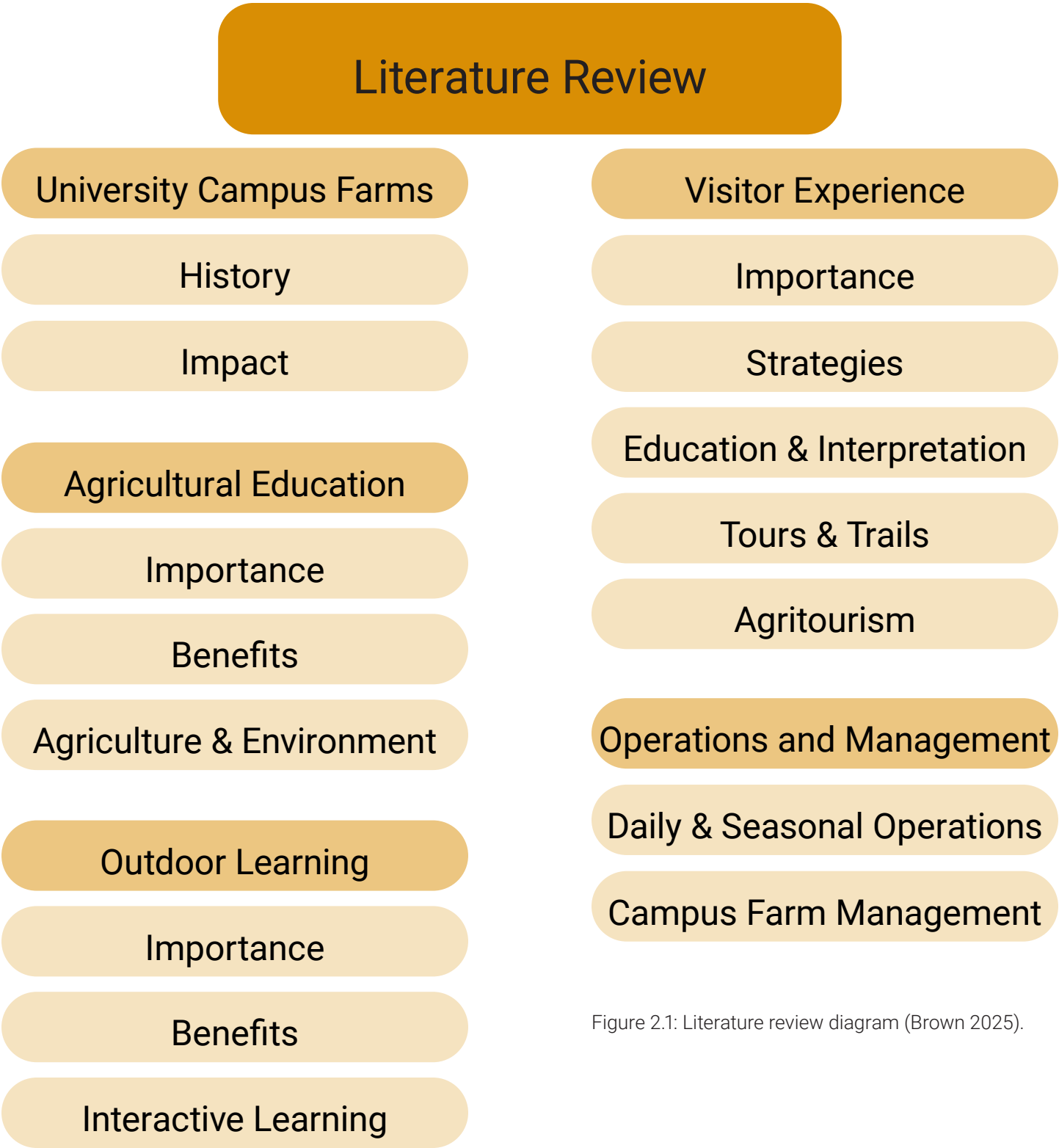


Figure 2.1: Literature review diagram (Brown 2025).

University Campus Farms

History

In 1862 President Abraham Lincoln passed the Morrill Act which allowed states to create land-grant schools of higher education (APLU 2025). **Many land-grant colleges were started with a focus on teaching agriculture practices and developed farms for such learning** (Leis et al. 2011). Throughout the years university campuses have evolved both physically and institutionally, and therefore so have the campus farms. Campus farms of today still focus on the education of agriculture with many targeting the education of sustainable agriculture and small-farm production (Leis et al. 2011). Campus farms across the country provide a variety of activities and opportunities, but all share the same goal of promoting agricultural production and education (Ratasky et al. 2015).

Impact

An increase of campus farms since the Morrill Act and even more so since the 1990's, has allowed agriculture and food system education to become an important topic on college campuses (Williamson et al. 2022). **Campus farms act as important training facilities for students and faculty to learn about food production, conduct research, and explore opportunities in agriculture** (Ratasky et al. 2015). Campus farms today provide many benefits not only to students and faculty, but also to the broader communities in which they are situated. These farms are beneficial by providing a space for real world experience through internships, job training, research opportunities, and classroom expansion (Leis et al. 2011). Developing a personal connection to the environment while learning is also a major benefit that campus farms provide for colleges (Williamson et al. 2022).

In many cases throughout the history of higher education institutions, campus farms have helped guide the developmental direction of many colleges. Agricultural departments and degrees have been added to schools because of the impact of campus farms. Along with the educational and real world experiential benefits to students, faculty, and the community, campus farms also have the ability to attract students to attend a university or pursue a career in agriculture (Leis et al. 2011). The impact that campus farms can have on the colleges and universities they are affiliated with should be a major factor in decisions related to university support and funding (Leis et al. 2011).

Figure 2.2: Aerial view of Willow Lake Student Farm looking back towards Manhattan, Kansas (Littlefield 2024).



Agricultural Education

Importance

There is a growing disconnect between people and the environment. **Today Americans spend 90% of their time indoors, causing a disconnect between themselves and the environment that sustains them** (EPA 2024). Moreso, children are also spending less time outdoors than any other time in history (Largo-Wight et al. 2018). The disconnection from the outdoors and convenience of the developed world has caused people to have a lack of knowledge of where food comes and not fully understand the benefits of nature (Pierssene 1999a and Tyo et al. 2024). For example, today there are many people that think the food system starts at the grocery store, when in reality it all starts with a seed and soil (Tyo et al. 2024). Because of human disconnect, it is essential to provide opportunities for education on these topics for when people do get outside **Agricultural education is more important now than ever before to raise awareness of a healthy lifestyle, inspire the next generation, and connect people back to the environment.**

Agriculture & Environment

The two most important types of education identified to help foster stewardship and awareness are environmental and agricultural education. Environmental education supports the development of understanding of the relationship between people and the environment. **Becoming more aware of the role people play in the environment and addressing the need to take part in preservation and sustainability practices is one of the main goals of environmental education** (Svobodova 2019). In outdoor environmental education people are able to learn about natural processes and sustainable practices such as rain gardens, the benefit of native plants, water conservation, and wildlife (Williams and Brown 2012a).

Benefits

Agricultural education is all about understanding the food system and the natural human need for sustenance, security, and meaning (Williams and Brown 2012a). People engaging in agricultural education activities can learn about local foods, medicinal and edible plants, food production, and nutrition and health benefits all while forming a love and connection to nature (Williams and Brown 2012a). **Throughout time food has played a major role in shaping societies, therefore food is one of the most significant parts of human history** (Williams and Brown 2012a). Because of the importance of food to the human population, learning about agriculture through outdoor education and learning gardens has become very popular at schools, museums, etc. Outdoor learning gardens can facilitate exploration of both agriculture practices such as planting, caring for and harvesting vegetables, but also provides real-life practical experience that otherwise may not be taught in a classroom (Williams and Brown 2012c).



Figure 2.3: Educational farm tour at Piccalilli Farm (Skabelund 2024).

Outdoor Learning

Importance

Compared to traditional classroom education, **outdoor education has proven to have many more benefits and provides both students and adults with opportunities to connect with nature.** Outdoor education can be conducted in many different forms. Forms such as educational walks, field exercises, field research, demonstrations, or excursions can be used to aid environmental and agricultural learning (Svobodova 2019). The commonality with all the forms of outdoor education is that they take place outside of the traditional classroom and require active engagement and movement and not just passively receiving information (Svobodova 2019). Because of the many benefits there is a push for more and more schools to embrace outdoor education and bring nature into formal education (Kuo et al. 2022).

Although schools often use outdoor education in the form of learning gardens, outdoor classrooms, or field trips, outdoor education is not restricted to only school curriculum. Outdoor education can also be used on sites to educate the public and adults on some of the same environmental and agricultural topics.

Benefits

One major benefit of outdoor education is the opportunity to foster human connections with nature. Spending time learning and playing in nature can be very powerful. For example, spending time in nature has been known to grow environmental stewards who then care for nature and work to conserve it (Kuo et al. 2022). Furthermore, spending time in nature fosters wonder and curiosity which is foundational to learning and encourages someone to want to search for answers (Williams and Brown 2012b). **Gardens are great examples of human-created nature spaces to foster learning.** In the case of outdoor education, gardens are often used to provide a space for children to continue to pursue curiosity, observation, and meditation while in nature (Williams and Brown 2012b). This connection with nature is a natural human experience and should be enjoyed by all to help people realize their connection to the land (Trapp et al. 1994b).

To expand upon the benefits of nature contact and outdoor education there have been many studies that highlight the mental and physical health benefits of learning in outdoor environments. **Benefits of learning in nature such as improved concentration, mental rejuvenation, reduced stress, and improved physical fitness all help to contribute to a more enjoyable learning experience** (Kuo et al. 2022; Largo-Wight et al. 2018). Educational benefits such as knowledge acquisition, conceptualization, exploration, and meta cognition are also all benefits from learning within an outdoor or nature setting (Svobodova 2019).

Interactive Learning

A key factor that makes outdoor education engaging and more enjoyable is interaction and hands-on learning. Within an outdoor environment, real-world experience and interaction is the most valuable form of education (Trapp et al. 1994b; Williams and Brown 2012c). For example, a garden-based learning program utilizes a garden as the teaching tool and allows for interaction, experimentation, and real-world experience (Williams and Brown 2012a). Gardens are a great example for hands-on outdoor education and can also be used to showcase workshops, classes, and other educational activities.

There are more interactive elements that can be used for outdoor education other than fully participating in an activity such as gardening.

Interactive signage, models, play structures, touch screens, tape recordings, odors, feel boxes, or other exhibits can all be used to stimulate the senses and imagination (Ballantyne and Hughes 2003).

Although the topics of signage and interpretation will be covered in depth later in this review, interactive signage can provide a more engaging experience and help improve overall visitor involvement.



Figure 2.4: Student work experience at Willow Lake Farm (Littlefield 2024).

Visitor Experience

Importance

Creating a positive visitor experience and connecting people with the environment is essential to carrying out the mission of a site. This report notes visitor experience at a variety of outdoor places with the focus specifically of creating a valuable visitor experience at gardens, small farms and agricultural sites.

Strategies

There are many strategies that can be used to improve the overall visitor experience at farms and agricultural sites. **The educational activities that can be offered to visitors at farms and agricultural sites are observation of crop production, observation of food and drink processing, participation in crops and animal care, and educational tours** (Sznajder et al. 2009a). Gardens specifically can provide education and engage people with their environment through the preparation, care, harvest, and eating of food grown on a farm (Williams and Brown 2012a). Alternate activities, not directly related to agricultural education (recreation), can help provide variety and an overall enjoyable visitor experience. Examples of these activities can be sports, hiking, horseback riding, hunting, fishing, or camping (Sznajder et al. 2009a). Activities and events for farms can constantly change depending on what is popular and most well-received for visitors.

Education & Interpretation

Both outdoor education and interpretation can be used to add to the visitor experience of a place. Education and interpretation have the ability to influence people emotionally and get them to care about a site leading to a change in behavior and attitude towards the environment and agriculture (Ballantyne and Hughes 2003). It would be simple if environmental interpretation was merely used to just state facts and information about a site (Pierssene 1999b). However, interpretation can be used to help people understand and appreciate a site, and if people enjoy a site, they can become attached to it which can lead the public awareness to see the need to conserve and care for the environment (Pierssene 1999a). This whole process can be started with simple interpretive signage which shows the larger impact a good visitor experience can have on a site.

Figure 2.5: Signage kiosk in the Willow Lake Farm yard (Skabelund 2024).



Tours & Trails; Signs & Brochures

Trails and educational tours can enhance the visitor experience of a site and provide enjoyable recreation and outdoor education opportunities. Trails can be designed primarily for either educational purposes or recreation. Recreation trails can come in the form of hiking, biking, or walking trails. Education trails are designed to allow visitors to walk around a site in a specific order with educational stations along the route to teach about important features of the site (Sznajder et al. 2009a). **To enhance education trails signage, tours, and pamphlets can be used to guide visitors along the path and teach them about the environment and topics of interest.** Interpretive signage can be placed along the trail next to important features and can utilize a variety of materials and graphics to attract interest (Trapp et al. 1994a). Although interpretive signage is probably the most common form of education along trails, brochures and informational pamphlets can also be beneficial. A well-designed trail brochure can be read at the convenience of the visitor and help educate others even without having to visit the site (Trapp et al. 1994a).

For both recreation and educational trails, the intent to connect people with nature and allow them to discover the mystery, variety, and beauty the environment has to offer (Trapp et al. 1994c). Trails can be thoughtfully designed to intentionally create these moments for visitors. To promote curiosity and mystery trails can be designed to make visitors wrap around a bend or go over a hill to discover what lies ahead (Trapp et al. 1994c). Similarly, variety on trails is important and can be designed to allow visitors to experience different landscape elements such as topography, trees, grasslands, opening, or rock features (Trapp et al. 1994c). **Well-designed trails with environmental interpretation can help create a positive visitor experience at farms and allow people to connect with nature.**

Agritourism

Using principles from the idea of agritourism can help provide a better visitor experience to farms, parks, protected areas, etc. Agritourism is all about education and tourism opportunities in an agricultural environment (Sznajder 2009b). Although WLSF may not be a site for traditional agritourism, it still has the goal of having a quality visitor experience while providing opportunities for agricultural education and interaction. **The term agritourism means tourism related to familiarizing oneself with farming practices and recreation on an agricultural site** (Sznajder et al. 2009b). The basic principles of agritourism include the opportunity for participation of agricultural and farming practices, learning about the work and lives of farmers, having direct contact with farm plants and animals, and overall learning about food production and agricultural systems (Sznajder et al. 2009b). The key relation of agritourism to providing a good visitor experience is the perceived value of the education component.

Figure 2.6: Signage kiosk at the Willow Lake Farm hügelkultur research plots (Skabelund 2024).



Operations and Management

Daily & Seasonal Operations

There are many basic daily farm operations necessary to maintain a successful farm. At many campus farms across the country as well as Willow Lake Student Farm some tasks such as garden plot maintenance, farm cleanup, mowing, and equipment repairs, are all included in daily farm operations. Depending on seasonality and events, these tasks can be done by farm managers, students, or volunteers, but all are necessary in keeping a well-maintained and quality agricultural site. The following elements involved in the daily farm operations are described in more detail below:

Plot preparation and planting is one of the most important parts of gardening. Knowing the right time to plant certain plants will impact the success of the food production for the rest of the season (McMahon et al. 2023). Tilling and working the soil before planting is essential to allow seeds to make direct contact with soil (McMahon et al. 2023).

Continuous **garden maintenance** throughout the growing season is essential to producing a successful harvest. Care for plants such as weeding, watering, pruning, and mulching allows plants the best opportunity to produce and abundance of food (McMahon et al 2023)

Composting involves allowing material such as grass clippings, leaves, weeds, kitchen scraps, sawdust, old hay, and garden refuse to decompose into rich organic material (McMahon et al. 2023). Compost can then be spread into planting areas to improve soil health and provide added nutrients for strong plant growth (McMahon et al. 2023)

Harvesting crops is one of the most exciting parts of gardening. Depending on the type of fruit or vegetable being grown and when it was planted, harvest times can vary throughout the growing season (McMahon et al. 2023). In most cases the foods being harvested should be washed and prepared for storage if not immediately being used for consumption.

After crops are harvested, **proper storage** is important to ensure the fruits and vegetables are ready for uses such as a CSA program, selling at farmer’s markets, food pantry donation, or cooking. Most garden vegetables will need to be refrigerated for short term storage, while some may need to be kept in warmer spaces to cure, such as potatoes and onions (McMahon et al. 2023).

At Willow Lake Student Farm sustainable agriculture is practiced. In addition to traditional garden and CSA plots there are permaculture and Hugelkultur plots. Some of these plots are ongoing research projects. The concepts of permaculture and hügelkultur are described in more detail below:

Permaculture is a form of ecologically conscious agriculture that seeks to minimize the human impact on the environment in a sustainable manner (Joshi 2023). The main goal of practicing permaculture is to mimic the processes of natural systems to grow food (Hazan and Cowan 2020; Joshi 2023).

Hügelkultur is unique form of permaculture that originated in Germany and involves the use of wood, soil, and organic matter buried in layers to form a raised bed system for planting crops (Hazan and Cowan 2020). Compared to flat planting beds, using hügelkultur can extend the growing season of some plants later in the fall and earlier in the spring (Hazan and Cowan 2020).

Campus Farm Management

There are many aspects and challenges to consider with the overall management of university campus farms. **Some of the biggest challenges in managing a campus farm are finding the proper funding and gaining university support, along with expressing the importance of the farm to maintain student and community involvement** (Leis et al. 2011; Ratasky et al. 2015). For example, on many campus farms across the country the main goal is to educate on sustainability and without the proper support, many farms are forced to compromise valuable education opportunities and instead work towards finding ways to financially support the farm (Ratasky et al. 2015). There are many approaches and strategies highlighted below to ensure the successful educational, financial, and staffing management of campus farms.

For campus farms the primary goal is to provide agricultural education. **In order to enhance agricultural education, it is important for campus farms to provide a variety of programming and opportunities for both students and the community** (Leis et al. 2011). Providing a variety of opportunities such as internships, workshops, training programs, course credit, and research projects can help attract and retain student involvement (Ratasky et al. 2015). Similarly, farm production outlets such as CSA programs, dining hall partnerships, and food bank donations can help campus farms have a greater outreach impact on campus and the community. There are also many opportunities to create educational connections between campus farms and community members. For example, K-12 field trips, farmer training programs, community volunteer days, and food drives can all extend the outreach of the farm while providing educational opportunities for the broader community (Ratasky et al. 2015).

One of the biggest challenges of managing campus farms is having the proper support and funding to maintain farm operations. As stated earlier, it is important to have a variety of opportunities that can serve multiple purposes to maximize the support and involvement available for campus farms. For example, while CSA programs and dining hall partnerships can help involve more students and community members, it is also used as another form of financial income (Ratasky et al. 2015). Other forms of funding and financial support for campus farms can include university support, grants, fundraising, farmer’s market sales, and tuition/registration fees (Ratasky et al. 2015).

Figure 2.7: Willow Lake Farm production garden plot in the fall (Littlefield 2024).



Another big challenge with many campus farms is gaining university support (Ratasky et al. 2015). **Involvement from various groups and organizations is important to maximize the impact and importance of a campus farm** (Leis et al. 2011). Different colleges and departments within a university can be involved with the campus farm through teaching courses or conducting research on the farm site (Leis et al. 2011). Having different college departments, faculty and staff, and student groups using the farm site can help express the importance of a campus farm to decision makers and ensure its lasting impact with a university.

For a campus farm to run efficiently and have a continued educational impact, it is important to also consider staff and those who will maintain the farm. For many campus farms it is essential to have at least one full time farm manager on staff. From a previous study it was found that **having an experienced and enthusiastic farm manager directly impacts the long-term success of a farm** (Ratasky et al. 2015). Student involvement is also important as one person can not maintain a whole farm themselves. Opportunities for students such as internships, apprenticeships, and volunteer days can help support the operations of a campus farm (Leis et al. 2011; Ratasky et al. 2015).



Figure 2.8: Willow Lake Farm high tunnel construction (Littlefield 2024).

METHODS

Methods Overview

For this project there were two main methods used to help answer the research question: precedent analysis and interviews. For the precedent analysis five agricultural sites were studied. These five sites provide examples on a variety of agricultural operations, events, programming and opportunities within different regions of the United States. Themes and findings were collected from the agricultural sites' website and from other online journals and articles. For the interviews a total of three key individuals were interviewed. One university farm manager, one university farm director, and one agricultural non-profit director. These interviews provided perspectives of successes and issues in farm operations and management, programming, and providing visitor experiences that can potentially be used for the Willow Lake Student Farm.

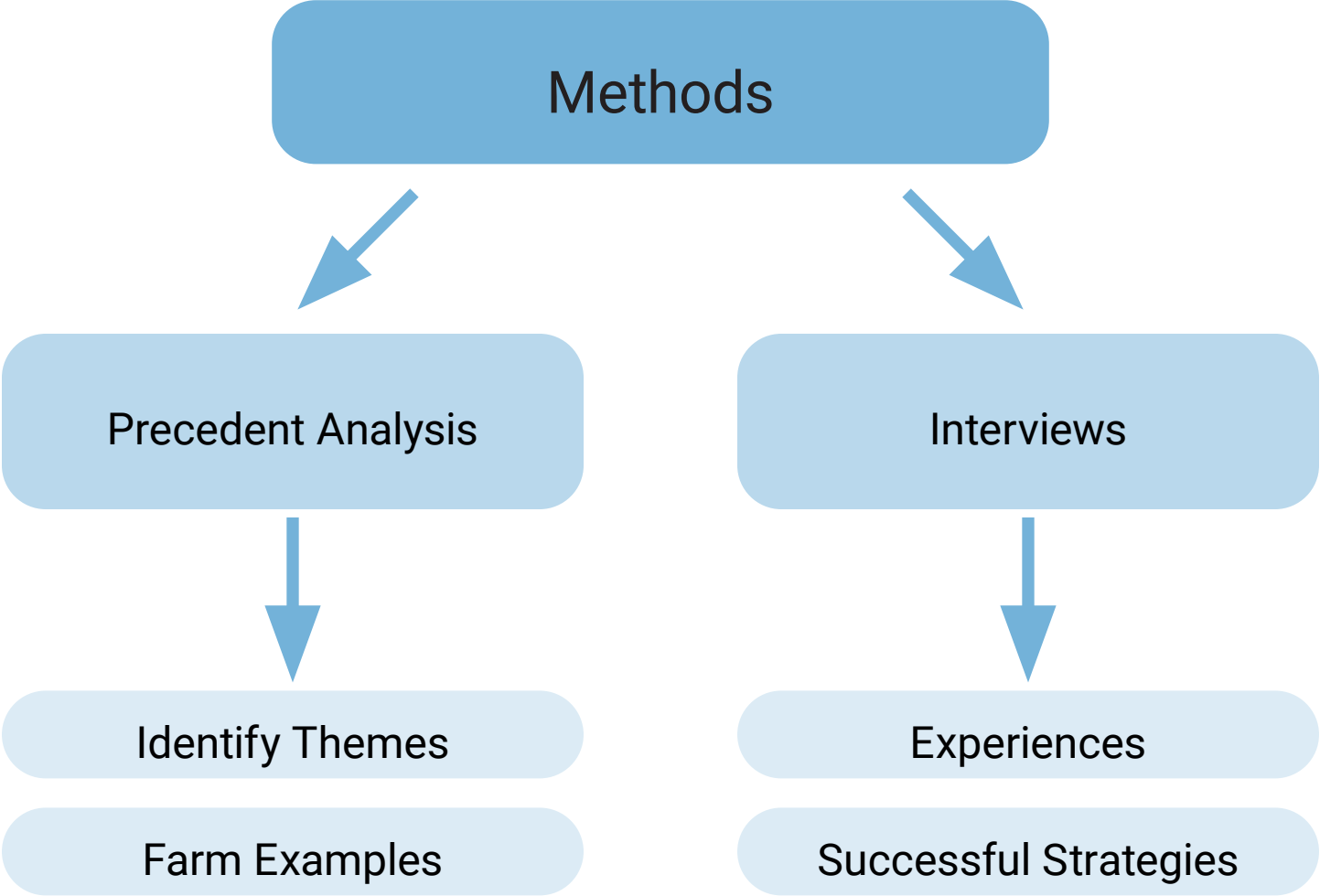


Figure 3.1: Methods overview diagram (Brown 2025).

Precedent Analysis

A precedent analysis was conducted for five existing university and related agricultural sites to explore their features and strategies to then be applied to the visioning for Willow Lake Student Farm. Looking at the farm background and context, site features and amenities, programs and events offered, and communication and outreach efforts were key in identifying potential strategies to be used at Willow Lake Student Farm.

Precedent Selection Criteria:

- Should promote agricultural and environmental education.
- Has a working farm for research or food production and sales.
- Provides opportunities for visitor participation in farm activities.
- Is a comparable size to Willow Lake Student Farm.

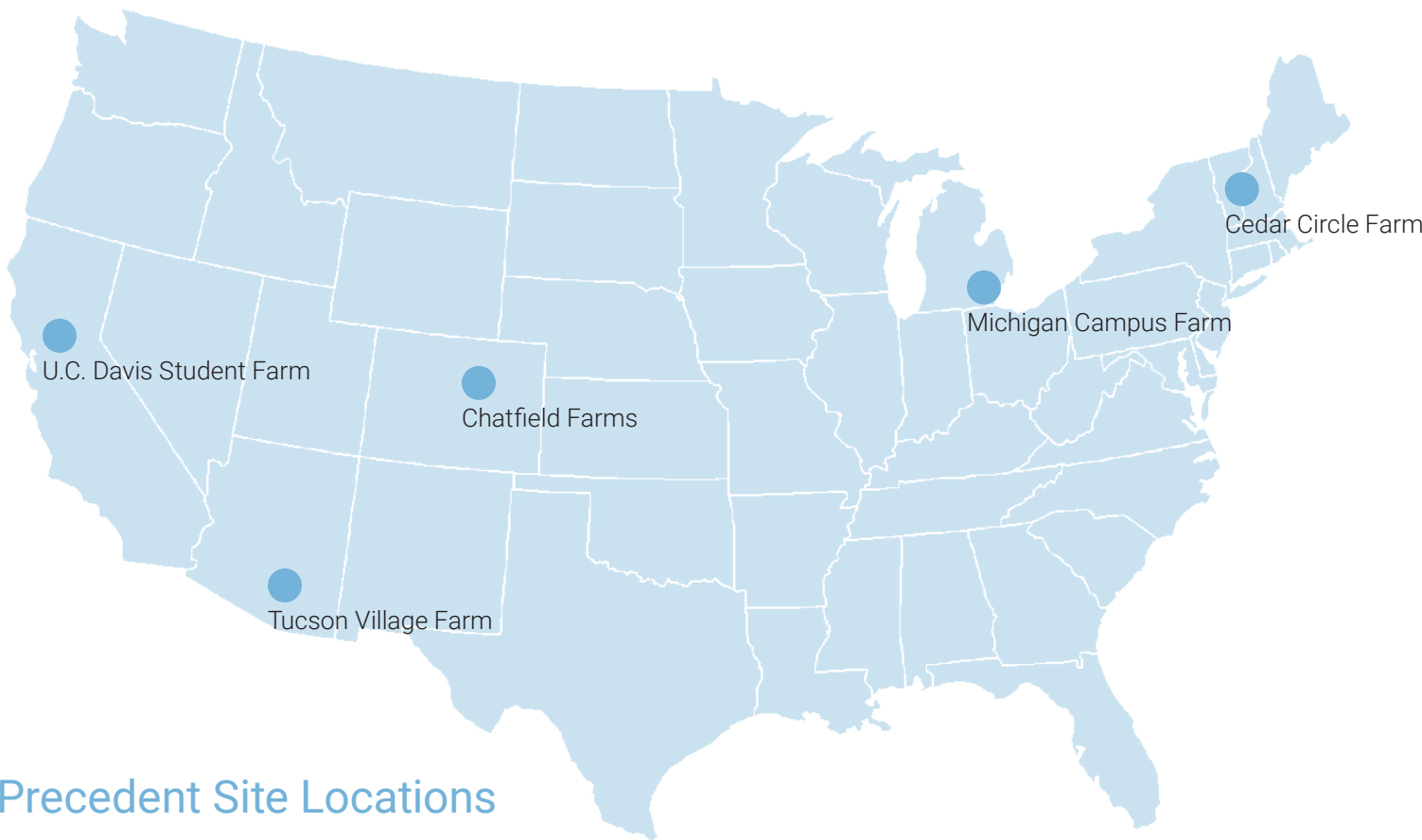


Figure 3.2: Precedent site locations map.
Created with Adobe Illustrator (Brown 2025).

Interviews

Interviews were conducted with three individuals from different organizations that were able to provide insight to be applied to the vision for Willow Lake Student Farm. The interviews took place through zoom or phone calls and each interview was recorded to be able to organize results. The interview recordings were then transcribed to identify themes and concepts that can be used in the development of the Willow Lake Student Farm conceptual master plan. The main goals of the interviews were to collect information on the farms'/ organizations' operations and management strategies, visitor and engagement and impact, communication and outreach efforts, and broader impact. The interview questions used are shown on pages 34-35. One first set of question was asked to the university farm manager and director, and the second set was asked to the non-profit director.

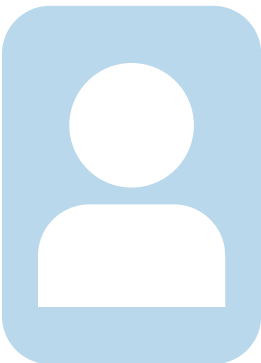
Interviewee Selection Criteria:

- Involved with an agricultural site that provides education and/or research opportunities
- Knowledge of agricultural education and providing a visitor experience
- Experience in operations and management of agricultural production
- Organization provides a variety of events and activities throughout the year



Interview 1: University Farm Director

The University Farm Director manages a farm focused on education with a variety of summer classes and courses that involve hands-on opportunities. The farm operates with a small team of one farm manager and several students, balancing production with educational goals. The director also emphasizes sustainability and data collection, teaching students about agricultural practices and seasonality.



Interview 2: University Farm Manager

The University Farm Manager oversees a farm focused on hands-on student education in vegetable production and sustainability topics. With a small team and some struggles with finding funding, the farm relies on grants and campus sales as financial support. The farm's impact is mainly within the university, but it does contribute to local food security through food pantry donations and provides valuable training for students.



Interview 3: Agricultural Non-profit Director

The Agricultural Non-profit Director oversees educational programming for beginning farmer training, with a focus on business management and sustainable agriculture. They emphasize sustainability and farm business development while advocating for changes in agricultural policy. Through the organization's efforts, they support both individual farmers and broader improvements in the agricultural community.

Interview Questions for University Farms

Farm Operations and Management

What are the primary operations and purpose of the farm? (i.e. crop production, fruit and vegetable, livestock, etc.)

How do you balance farm production with education and research goals?

How many staff members and students are involved in the operations of the farm?

What strategies do you use to ensure financial stability for the farm? Are there specific outlets used for crop/farm products?

Educational Programming

What role does the farm play in student education and research? Are there specific courses or programs that are directly involved with the farm?

What types of learning opportunities are offered to students and visitors? What educational elements have proven to be the most successful?

Visitor Engagement and Impact

What are some of the most important topics/lessons that should be taught to your visitors?

How are sustainability topics such as green infrastructure, water management, or pollinators included in the visitor experience? Are there any areas designed or used specifically for demonstrations?

Do you conduct any educational farm tours? If so, how long does a tour last? What are the topics covered and experiences of each tour?

Communication and Outreach

What communication and outreach methods do you use to bring in visitors and keep them up to date on ongoing activities and events?

Approximately how many visitors or participants do you engage with each year? How many people do you have for some of your larger events?

Broader Impact

Do you collaborate with any local schools or other organizations? If so, how has that partnership experience gone?

What impact do you feel the farm has on the broader community/region?

What other thoughts do you have about this topic or the issues we have discussed?

What suggestions do you have for those managing Willow Lake Student Farm?

Interview Questions for Agricultural Non-Profit

Educational Programming

What agricultural education or training programs do you offer to visitors?

What educational programs have proven to be the most successful?

How do you manage your programs and events to provide variety throughout the year or for repeating visitors?

How do you incorporate hands-on learning into your educational programs and activities?

What are the challenges when engaging with different age groups? How do you best provide educational opportunities for all ages?

Visitor Engagement and Impact

What are some of the most important topics/lessons that should be taught to your visitors?

How are sustainability topics such as green infrastructure, water management, or pollinators included in the educational experience?

Do you conduct any educational farm tours? If so, how long does a tour last? What are the topics covered and experiences of each tour?

Communication and Outreach

What communication and outreach methods do you use to connect to people and keep them up to date on ongoing activities and events?

Approximately how many visitors or participants do you engage with each year? How many people do you have for some of your larger events?

Broader Impact

Do you collaborate with any local schools, universities, or other organizations? If so, how has that partnership experience gone?

What impact do you feel the organization has on the broader community/region?

What other thoughts do you have about this topic or the issues we have discussed?

What suggestions do you have for those managing Willow Lake Student Farm?

FINDINGS

Precedent 1 - University of Michigan Campus Farm

Location: Ann Arbor, Michigan

Size: 10 acres

Farm Type: University campus farm

Site Background: The University of Michigan Campus Farm is a part of the larger Matthaei Botanical Gardens and Nichols Arboretum. Within the site there are a variety of gardens, a conservatory, many trails and natural areas, and the campus farm. The Michigan Campus Farm was created in 2012 and focuses heavily on providing learning opportunities on sustainable food production.

Mission/Vision: “The Campus Farm aims to provide a living learning laboratory for sustainable food systems work on campus, advance food justice within the greater University of Michigan community, and empower students through leadership development to be agents of change” (Matthaei Botanical Gardens and Nichols Arboretum).



Context Map

Figure 4.1: University of Michigan Campus Farm context map. Created with Adobe Illustrator (Brown 2025).



Site Features and Amenities

- Vegetable and cover crop plots
- Perennial edible landscaping plots
- Hoop houses
- Interpretive signage
- Gathering & event building
- Trails connecting to botanical gardens

Programs and Events

- Student internships
- Farm club
- Student research activities
- Harvest festival
- Volunteer days
- Community garden program

Communication and Outreach

- Partnership with campus food pantry
- Weekly farm stand during growing season
- Farm newsletter
- Active social media accounts



Figure 4.2: An arch defines the entrance from surrounding trails into the farm.



Figure 4.3: The straw bale structure building was designed and built by students and serves as a meeting place for the farm.



Figure 4.4: Interpretive signage can help visitors learn more about the farm and important agricultural topics.



Figure 4.5: The farm has 4 hoop houses for winter growing and a bus stop shelter for student transportation.



Figure 4.6: Many students are involved in the operations of the farm including planting, maintenance, and harvesting crops.

Application to WLSF

Similar to Willow Lake Student Farm being located next to Tuttle Creek State Park, the Michigan Campus farm is located next to the Matthaei Botanical Gardens natural area. This precedent provides a good example of how an agricultural space can benefit from its proximity to nature by connecting to nearby recreation trails and providing environmental education opportunities. This connection can provide a larger variety of activities and allow visitors to experience a deeper connection with nature.

Figures 4.2 - 4.6: University of Michigan Campus Farm images (Skabelund 2022).

Precedent 2 - Tucson Village Farm

Location: Tucson, Arizona

Size: 35 acres

Farm Type: University extension farm

Site Background: Tucson Village Farm is a community farm in partnership with the University of Arizona extension. It is located north of Arizona’s main campus and focuses heavily on youth education and engagement, which naturally also helps educate parents, caregivers, and educators. The farm was started in 2010 and has steadily developed since then, becoming a successful center for agricultural education today.

Mission/Vision: “Our vision is to cultivate healthy lifestyles, wellness, resilience, and sustainability in young people, empowering them to be contributing members of their communities” (The University of Arizona).



Context Map

Figure 4.7: Tucson Village Farm context map. Created with Adobe Illustrator (Brown 2025).



Site Features and Amenities

- Fruit and vegetable plots
- Demonstration garden plots
- Outdoor workshop & gathering patio
- Chicken coop
- Culinary education center
- Ropes course

Programs and Events

- Field trips
- Summer camps
- Cooking classes
- 4-H healthy living club
- Student internships & apprenticeships
- Volunteer days

Communication and Outreach

- Weekly farm market
- Online farm shop
- Farm newsletter
- Active social media accounts



Figure 4.8: Tucson Village Farm focuses primarily on youth education.



Figure 4.9: Hands-on interactive learning helps youth learn about gardening at a young age.

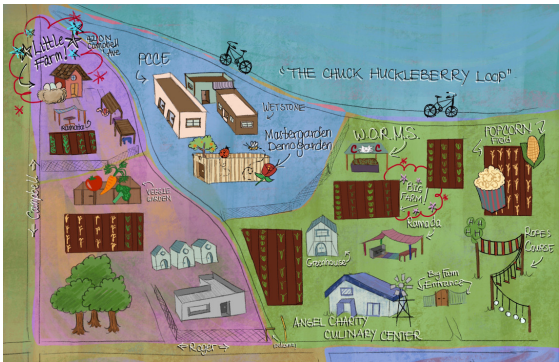


Figure 4.10: This illustrative map posted on the website highlights the major spaces of the farm.



Figure 4.11: Larger events and festivals are often held to bring awareness to the farm, urban agriculture, and healthy eating.



Figure 4.12: A weekly vegetable market offers a variety of farm products to consumers.

Application to WLSF

Willow Lake Student Farm currently offers some programming and events for students, but not as much so for the broader community. This precedent is a good example of what programming activities and events can be offered throughout the year to engage with a variety of ages of students and community member. Tucson Village Farm also provides a unique seed-to-table preparation learning experience offering classes from gardening to food prep and cooking.

Figures 4.8 – 4.12 Tucson Village Farm images (Tucson Village Farm 2025).

Precedent 3 - U.C. Davis Student Farm

Location: Davis, California

Size: 23 acres

Farm Type: University campus farm

Site Background: The U.C. Davis Student Farm is located on the U.C. Davis campus and is dedicated as a space for student education, research, and involvement. The farm was started in 1977 and focuses on being a model for sustainable agriculture and providing space for students to explore both agricultural and environmental systems.

Mission/Vision: “The U.C. Davis Student Farm’s Mission is to hold a space where students can learn, practice, and model an ecologically, socially, and economically sustainable agriculture and food system. The Student Farm welcomes all students to build this more equitable and just farm and food system by cultivating student initiative, leadership, experiential learning, and inclusive communities” (U.C. Davis Agricultural Sustainability Institute).



Context Map

Figure 4.13: U.C. Davis Student Farm context map. Created with Adobe Illustrator (Brown 2025).



Site Features and Amenities

- Organic vegetable plots
- Flower and herb plots
- Orchard and vineyard
- Farm shop building
- Greenhouses
- Wooded area for environmental research

Programs and Events

- Collaboration with four university departments
- Student internships for credit
- Volunteer days
- CSA program
- Farm tours
- Hands-on community workshops

Communication and Outreach

- Farm stand
- Farm newsletter
- Farm resource library for students and the public
- Partnership with campus food pantry



Figure 4.14: The farmstand offers a variety fruits and vegetables.



Figure 4.15: The university classes often make use of the farm for field trips such as this class preparing a bed for planting.



Figure 4.16: The ecological garden section is used for teaching ecological horticulture through growing vegetables and flowers.



Figure 4.17: A variety of gardens are offered at the student farm including research fields, community gardens, and a market garden.



Figure 4.18: UC Davis students wash and prepare harvested vegetables in the packing shed.

Application to WLSF

Although there are some outside visitors, the U.C. Davis Student Farm primarily focuses on providing educational opportunities to university faculty and students. This precedent shows the collaborations with departments and research opportunities that can attract and retain engagement with student populations at the farm. With Willow Lake Student Farm’s proximity to the Forestry Research Center there are many opportunities to partner with other college departments to bring more students to the site.

Figures 4.14 – 4.18: U.C. Davis Student Farm images (UC Davis Student Farm, March 14, 2025, <https://asi.ucdavis.edu/programs/sf>).

Precedent 4 - Cedar Circle Farm

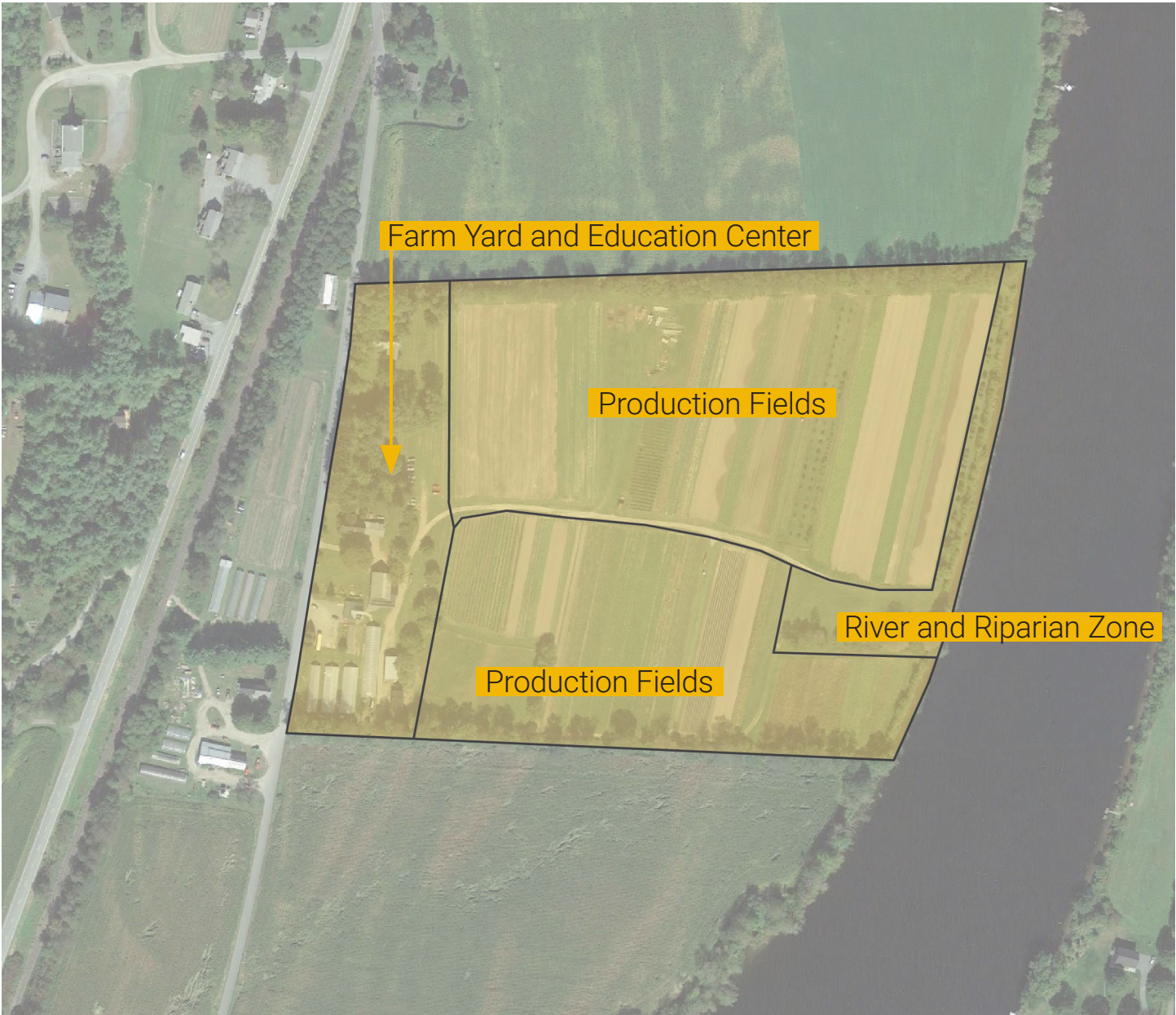
Location: Thetford, Vermont

Size: 25 acres

Farm Type: Non-profit education and production farm

Site Background: Cedar Circle Farm is a non-profit education and production farm, located along the Connecticut River. Over the years, the farm has developed from a dairy and horse farm into the organic farm and education center that it is today. Cedar Circle Farm focuses on providing agricultural education and training opportunities for all members of the community.

Mission/Vision: "Cedar Circle Farm and Education Center is dedicated to agricultural scientific research in the public interest and providing agricultural education and training to children, parents, educators, farmers, consumers, students and other members of the public to promote organic, regenerative farming and the transition to a localized food economy, including by producing healthy, organic food for the local economy in a way that enhances resources for future generations" (Cedar Circle Farm and Education Center).



Context Map

Figure 4.19: Cedar Circle Farm context map. Created with Adobe Illustrator (Brown 2025).



Site Features and Amenities

- Organic produce plots
- Organic flower plots
- Education & demonstration gardens
- Greenhouses
- Education center building
- Commercial kitchen and cafe

Programs and Events

- Seasonal day and week-long camps
- Gardening, cooking, and ecology workshops
- Training and mentorship programs
- Farm tours and field trips
- CSA program
- Seasonal farm festivals

Communication and Outreach

- Farm stand and online shop
- Farm blog and newsletter
- Gardening and cooking resources page
- Active social media accounts



Figure 4.20: The Pumpkin Festival is one of the many events at the farm.



Figure 4.21: The production fields at Cedar Circle Farm and Education Center overlook the Connecticut River.



Figure 4.22: Farm tours allow visitors to learn from experts about the farm’s operations and key sustainable agriculture topics.



Figure 4.23: A farmstand offers a variety of organic fruits, vegetables, and flowers to visitors.



Figure 4.24: The Hello Café just across from the farmstand is a coffee shop serving organic, fair trade coffee and drinks.

Application to WLSF

Although Cedar Circle Farm is a non-profit organization, its strategies and focus on providing educational opportunities for the public can be applied to Willow Lake Student Farm. This precedent provides a good example of how a working farm can incorporate education and training to teach people more about agricultural practices and healthy food. The many programming and events opportunities that are put on such as seasonal festivals, farm tours and class field trips, and hands on workshops can be used at Willow Lake Student Farm.

Figures 4.20 – 4.22 & 4.24: Cedar Circle Farm images (Cedar Circle Farm and Education Center, March 14, 2025, <https://cedarcirclefarm.org/>).

Figures 4.23: Cedar Circle Farm produce stand (Photo Courtesy of Cedar Circle Farm and Education Center. © Ben Deflorio).

Precedent 5 - Chatfield Farms

Location: Littleton, Colorado

Size: 700 acres

Farm Type: Native plant refuge and working farm

Site Background: Chatfield Farms is a working farm and native plant refuge located just southwest of Denver, Colorado. The site, owned by the Denver Botanic Garden, includes a working farm, native plant gardens, and natural areas. Chatfield Farms focuses on the education of past and present agriculture and native plants of the west, while providing opportunities for exploration and recreation.

Mission/Vision: "In support of the Gardens' institutional mission of connecting people with plants, the purpose of Chatfield Farms is to inspire the public to be good stewards of the environment by connecting people to our past, present and future relationships with plants of the Rocky Mountain region" (Denver Botanic Gardens).



Context Map

Figure 4.25: Chatfield Farms context map. Created with Adobe Illustrator (Brown 2025).



Site Features and Amenities

- Vegetable and flower production plots
- Native plant gardens
- Deer Creek natural area
- Historic ranch site
- Educational signage
- Children's play area

Programs and Events

- Youth farm camp
- Farming and ecology workshops
- Farm tours and field trips
- CSA program
- Seasonal festivals
- Private events booking

Communication and Outreach

- Events and program calendar
- Mobile app for interactive visits
- Botanic gardens blog and newsletter
- Active social media accounts



Figure 4.26: Interpretive signs educates visitors about sustainable ag.



Figure 4.27: A riparian demonstration garden provides an example of how a healthy ecosystem functions.



Figure 4.28: Different types of gardens, such as this prairie garden, surround the farm’s visitor center.



Figure 4.29: Chatfield Farms sits at the foothills of the Rocky Mountains just southwest of Denver, Colorado.



Figure 4.30: A butterfly house is a unique attraction that also educates visitors on the importance of pollinators.

Application to WLSF

Chatfield Farms is owned by the Denver Botanic Gardens but is managed in cooperation with the U.S. Army Corps of Engineers. Since the farm is connected to Deer Creek Natural Area this partnership has created an efficient land management agreement between the two entities. This partnership has been successful and can be a great example for Willow Lake Student Farm and its proximity to nature and Tuttle Creek State Park. This precedent also provides a great example of how an educational farm can provide a wide variety of nearby opportunities for visitor interest.

Figures 4.26 – 4.30: Chatfield Farms images (Photos Courtesy of Denver Botanic Gardens. © Scott Dressel-Martin).



Interview 1 Results: University Farm Director

Farm Operations and Management

What are the primary operations and purpose of the farm?

The garden is a student run farm, and its primary purpose is to host a class for students to take during the summertime and they do much of the work of operating the farm. So, I'd say **education** would be the primary purpose.

How do you balance farm production with education and research goals?

There is more than one way to do anything and sometimes people get sure that their way is the best. My farm manager, students, and myself will talk things through and I try to be pretty open minded of ideas and ways to better **learn while producing food**. I'm really into record keeping. I'm of the mind that **we should always be collecting data** to then be used to improve and learn of better ways for farm production.

How many staff members and students are involved in the operations of the farm?

There is myself, and then I have one professional staff member. Usually, we will hire **two higher level undergraduate students** and have **twenty students involved in the summer class**. Then there are around four more **students doing independent research projects** and are involved with the farm.

What strategies do you use to ensure financial stability for the farm?
Are there specific outlets used for crop/farm products?

We have a **CSA**, we do a **farmstand**, and sometimes we do **farmer's markets** for selling crop products. We also often do **wholesale to the university dining centers**. The CSA is the bulk of the revenue and it fairly predictable for income.

Educational Programming

What role does the farm play in student education and research? Are there specific courses or programs that are directly involved with the farm?

The **summer class** that meets out there is a pretty big deal and **meets for 12 weeks** during the summer. In the **fall and spring** semesters there is probably a dozen different classes that are involved with the farm, such as weed ecology, soils, horticulture, and food systems, and entomology courses. They come out and help with planting, do farm tours, take sample, and observations.

What types of learning opportunities are offered to students and visitors? What educational elements have proven to be the most successful?

We probably have around **1200 people a year** come out **to the farm** between local schools, 4-H groups, local tv channels, and farm tours all come out for **various events** and **educational opportunities**. Around **eighty CSA members** also come out to the farm to pick up their weekly boxes and often stick around for awhile just to be there and learn about agriculture. We also send a **newsletter** with the CSA to educate them on what types of foods they are receiving.

Visitor Engagement and Impact

What are some of the most important topics/lessons that should be taught to your visitors?

One of the most important things to me is **appreciating seasonality** and that's a challenge with local eating and understanding that not all our foods and crops are available throughout the year.

How are sustainability topics such as green infrastructure, water management, or pollinators included in the visitor experience? Are there any areas designed or used specifically for demonstrations?

It depends on the visitor. For the class many students are in programs and those topics are taught on the farm. Not everything we do is 100% sustainable and there is **always tradeoffs**, especially with irrigation for crops and electricity to run greenhouses, and transportation getting to the farm. So, I like to teach students about that and just being aware of **the complexity of sustainability**.

Do you conduct any educational farm tours? If so, how long does a tour last? What are the topics covered and experiences of each tour?

We definitely do farm tours, especially for the classes. We also do tours during our welcome back party and research field day. A typical tour lasts around one hour.

Communication and Outreach

What communication and outreach methods do you use to bring in visitors and keep them up to date on ongoing activities and events?

People usually find us, as I am also getting requests for people wanting to come take a tour. We **use social media** and then the **college promotes many of our events** within the community.

Approximately how many visitors or participants do you engage with each year? How many people do you have for some of your larger events?

The farm interacts with around 1200 people each year. For larger events there are probably around 200 people at the farm at a time. And every CSA pickup has 80 people coming through every week. The classes and walking tours are usually 30 or 40 people at a time.

Broader Impact

Do you collaborate with any local schools or other organizations? If so, how has that partnership experience gone?

We have a lot of private schools and outdoor education focused **summer camps** that find us wanting a farm tour. One year I had a student and their only job was doing tours for summer camps that come to the farm. The experience is always really good when people come out to the farm.

What impact do you feel the farm has on the broader community/region?

We are pretty well known in our region. Our impact on the food system is not huge, but the students that come through these classes and are involved with the farm often end up working for other agriculture companies or starting their own farms after their time on campus. So we are essentially **job training for some students** to learn employment skills and knowing how to do things.



Interview 2 Results: University Farm Manager

Farm Operations and Management

What are the primary operations and purpose of the farm?

The **number one goal is education**. It's a learning farm, but we grow mostly vegetables. We have some perennial fruit.

How do you balance farm production with education and research goals?

The biggest thing we try to do is **focus on the educational quality** over how much we're earning. So my goal is always to allow my students to ask questions and to focus on what they're interested in, but at the end of the day, it's **hands on education**. So I somewhat assume that just by working on a farm, they're going to learn a lot.

How many staff members and students are involved in the operations of the farm?

It is just me in terms of management. And then my boss is a supervisor, but they don't spend time on the farm, so really they're just an advisor. And then usually I have **four student staff throughout the summer and into the fall**.

What strategies do you use to ensure financial stability for the farm?
Are there specific outlets used for crop/farm products?

That's our biggest struggle. Funding cuts caused us to lose funding and now we rely on finding grants and what we can sell. We **sell wholesale to a couple of places on campus**. There's a restaurant that's really supportive of us on campus and we also **sell to the food pantry**, some of the nutrition classes, and then we have a **market stand** that we set up on campus, as well as a **CSA program**.

Educational Programming

What role does the farm play in student education and research? Are there specific courses or programs that are directly involved with the farm?

We're trying to develop more courses, but historically, there have been two that have been directly related to the farm. A fall course uses the farm as their labs for seeding, weeding, and projects to help improve the farm. The other course was a **spring planting and planning course**. We also do a lot of **volunteering and service learning** related with the classes as well as **provide internships** for class credit.

What types of learning opportunities are offered to students and visitors? What educational elements have proven to be the most successful?

We offer tours, mostly to classes. I do some **seminars** talking about what the farm is and what the opportunities are. It's kind of a two way street, so the people who come are getting some education, but like to have my **students lead those tours** so then they're getting to reinforce their skills by talking about what they're doing and learning. **Teaching as a form of learning** is one of my favorite tools to use.

Visitor Engagement and Impact

What are some of the most important topics/lessons that should be taught to your visitors?

I try to **tailor to what people ask for**. We do get outside groups and classes that may be interested in local food or sustainability, and this is one of the areas where we could put more time in. We are working to put together a format to give students a guide of the specific topics to discuss when giving tours. Letting people ask questions also helps in letting people learn about what they're interested in.

How are sustainability topics such as green infrastructure, water management, or pollinators included in the visitor experience? Are there any areas designed or used specifically for demonstrations?

We do have some structures that we talk about on tours such as our high tunnels and deep winter greenhouses. We also talk about **season extension and water irrigation** for sustainability topics. There is a pollinator area at our farm as well and an **outside classroom right next to the farm used as a meeting place**.

Do you conduct any educational farm tours? If so, how long does a tour last? What are the topics covered and experiences of each tour?

A typical tour usually lasts between 30 and 60 minutes depending on what the people or group wants.

Communication and Outreach

What communication and outreach methods do you use to bring in visitors and keep them up to date on ongoing activities and events?

Social media is something we're trying to grow our presence on. We also do a **monthly newsletter**. A lot of our advertising goes through our horticulture department, but unfortunately a lot of it has just been **word of mouth**. We are still trying to build the communication and outreach.

Approximately how many visitors or participants do you engage with each year? How many people do you have for some of your larger events?

Last year we had around **300** with **volunteers, tour guests, and my staff**. **For larger events** we usually have around **300 to 500 people each year**. Somewhere between 60 and 90 people are at our larger events at a time and then most tours are in the 20 to 40 range.

Broader Impact

Do you collaborate with any local schools or other organizations? If so, how has that partnership experience gone?

We don't have any direct local school relationships on our own, but one of the professors is an advisor to a school, so they come every year as part of their program in agriculture and help volunteer. I think it's not always a great fit in terms of our goals. **I want to be able to be a place where more and more people come to learn, but I also really want to focus on my staff's learning.**

What impact do you feel the farm has on the broader community/region?

Not a ton. **We** do **focus pretty inward on the university**. We donate some of our produce to a local food pantry so there is that impact. One of the projects that I am working on is tracking where our staff is going after graduation to see the regional impact of the farm.



Interview 3 Results: Agricultural Non-Profit Director

Educational Programming

What agricultural education or training programs do you offer to visitors?

We currently offer a variety of beginning **farmer training classes**. This year, we're offering a program, which is helping people refine their ideas of starting a farm. We vary it up year by year, depending on registrations.

What educational programs have proven to be the most successful?

We have a wide variety of programs. In the past we did a lot of programs on **food and vegetable production**, specifically in **high tunnels**. More recently, we've done more general beginning farmer programs, which I feel have been successful. Once a year we have a **conference** and we get a number of **farmers who attend** those and learn from a variety of different topics, such as **conservation practices, business management**, etc.

How do you manage your programs and events to provide variety throughout the year or for repeating visitors?

We don't have a teaching farm so we do many **independent classes** and try to spread those out around the state, just to provide access to people. Since 2020 we've also been offering a number of **classes online**. Most of our funding is grant dependent, so it kind of depends on grant cycles, what we're offering when.

What are the challenges when engaging with different age groups?
How do you best provide educational opportunities for all ages?

We don't do much to differentiate between age groups. Almost all of our **work is targeted at adult learners**, but we did have some youth engagement at one of our conferences last year.

Visitor Engagement and Impact

What are some of the most important topics/lessons that should be taught to your visitors?

We have a **primary focus** on **farm business management**. In the past, we taught a little bit more about **basic conservation practices**. We still do some engagement on those practices, like how to manage prairie strips or talking about certain crops, but we really focus on individual **farm business management and market development**.

How are sustainability topics such as green infrastructure, water management, or pollinators included in the educational experience?

Our **primary mission** is to focus on **sustainable agriculture and food systems**, so that's central to what we do. We will have opportunities to learn about some of those topics of **green infrastructure, water management or pollinators**, in any of our **workshops**. Lately we spend less time focusing on the specifics of managing those practices and more of the farm business management.

Do you conduct any educational farm tours? If so, how long does a tour last? What are the topics covered and experiences of each tour?

We do around **three to five** different **farm tours** a year. Those are usually **about an hour**, and is driven by grant deliverables, for what specific topics we cover. A **typical growing class** would be **two or three hours long** with half the time being dedicated to classroom learning on specific topics and the other half being dedicated to a farm tour. Some of the topics we cover are **land access, cover crops, weed management, basic growing practices, and business management**.

Communication and Outreach

What communication and outreach methods do you use to connect to people and keep them up to date on ongoing activities and events?

We have a **social media presence** on Facebook, Instagram, X, and Blue Sky. We also have a **monthly email newsletter** that we send out. About three times a year, we do a print newsletter also. We kind of use all of these to keep people up to date on what we're doing and also to share opportunities for education.

Approximately how many visitors or participants do you engage with each year? How many people do you have for some of your larger events?

Probably between 300 and 400 people in a variety of contexts. We have an annual conference that usually has about 100 to 150 people in attendance. A variety of workshops attract around 15 to 30 people at a time. So, if you added all those up it's probably around **400 or 500** people a year for **in person engagement**. Through our educational channels we engage with people through our **email list and newsletter** print to reach **around 4000 people**.

Broader Impact

Do you collaborate with any local schools, universities, or other organizations? If so, how has that partnership experience gone?

We have a lot of **partnerships**. In the past we have gone to **local schools** to talk about sustainable agriculture in environmental studies class. We have research and outreach partnerships with **local universities and other organizations across the state**.

What impact do you feel the organization has on the broader community/region?

The **two impacts** that we most centrally have are **on different scales**. We spend a lot of effort on **direct farmer education**. We've been able to support a lot of smaller farms or alternative agricultural producers to become profitable and stay in business. We have another larger impact in the realm of **agricultural policy**. We've pushed for a number of different things over the years, and we keep pushing as sort of an ongoing fight to make changes through agricultural policy. Last year we were part of a lobbying coalition that was able to get \$900,000 allocated to buy local food, locally produced food, and move that to food banks across the state. We **work in both the background and foreground** to help to support conditions for a **more viable and sustainable farming system**.

What suggestions do you have for those managing Willow Lake Student Farm?

The suggestions I have for those who are managing it would be to make sure that there is **student engagement** in all parts of managing the farm, including things like **fundraising**. I think it's valuable to have that experience, regardless of where students go in the future.

CONCEPTUAL MASTER PLAN

Section 1: Overall Visioning

Introduction to Willow Lake Student Farm

Willow Lake Student Farm is located five miles northeast of K-State’s main campus in Manhattan and has been working to connect students with agricultural practice since 2008. With a future change in farm leadership, struggle for student and community involvement and current lack of easy access and layout organization this conceptual master plan provides bold design solutions and future recommendations to make Willow Lake Student Farm the premier student farm for Kansas State University.



Figure 5.1: Aerial view of Willow Lake Student Farm (Littlefield 2024).



Figure 5.2: State Park Context Map. Created with Adobe Illustrator (Brown 2025).



History of Willow Lake Student Farm

The current site of Willow Lake Student Farm has steadily evolved over the years. It was originally the location for a fisheries and aquaculture station used by the U.S. Fish and Wildlife Service before being leased by the Department of Horticulture and Natural Resources in 1964 and developed into space for forestry and natural resources research (KSU Horticulture and Natural Resources - Tuttle Forestry Research Center). The 85-acre site remained primarily forestry and wildlife research with a small portion being dedicated to creating the student farm in 2008. Willow Lake Student Farm was started by a former faculty member Dr. Rhonda Janke and K-State alumna Lani Myer with the goal of providing a space for sustainable agriculture education (Willow Lake Student Farm). The farm started as 2.5 acres and was expanded to 7 acres in 2018 to include food forest, hügelkultur, and permaculture plots.



Figure 5.3: 1991 — The farm site is used for forestry research with tree plots and a field office building.



Figure 5.4: 2003 — The farm site mostly remains unused as larger forest research plots begin to develop nearby.



Figure 5.5: 2010 — Willow Lake Student Farm started with 2.5 acres of space for garden plots and repurposing the old field office into the farm shop.



Figure 5.6: 2023 — Willow Lake Student Farm has expanded to 7 acres with added high tunnels, food forest and permaculture plots, and an 8' deer fence surrounding it all.

Figures 5.3 – 5.6: Aerial imagery of the farm site through time (Google Earth 2025).

Site Analysis

An analysis of the existing student farm site presented many issues as well as opportunities For Willow Lake Student Farm. A lack of formal organization, no equipment storage, and underutilized spaces, were identified challenges for the farm. Plenty of open space for future expansion, a relatively flat site, and the desire for more educational opportunities were all highlighted as opportunities for the farm design.



Figure 5.7: The Yard is the current primary gathering space for the farm.



Figure 5.8: Cut tree logs are used for the outdoor amphitheater space.



Figure 5.9: The farm has plenty of unused open space and opportunity for expansion.



Figure 5.10: The entrance of the farm is overgrown and is gated off when not occupied.

Figures 5.7 – 5.9: Willow Lake Student Farm existing conditions (Skabelund 2024).

Figure 5.10: Willow Lake Student Farm existing entry (Skabelund 2025).



Figure 5.11: Willow Lake Farm site analysis diagram. Created with Adobe Illustrator (Brown 2025).

Context Analysis

The farm site along with the Tuttle Forestry Research Center is situated within Tuttle Creek State Park and is surrounded by Willow Lake, the old Blue River flow path and other agricultural land. Proximity to surrounding trails, campgrounds, and recreation can provide more opportunities for visitors. The current access to the farm is through the state park which requires either a state park permit or a gate access code.



Figure 5.12: The open fields in the Tuttle Forestry Research Center area are used for wildlife research.



Figure 5.13: The research forests' canopy creates a scenic loaction to hold events.



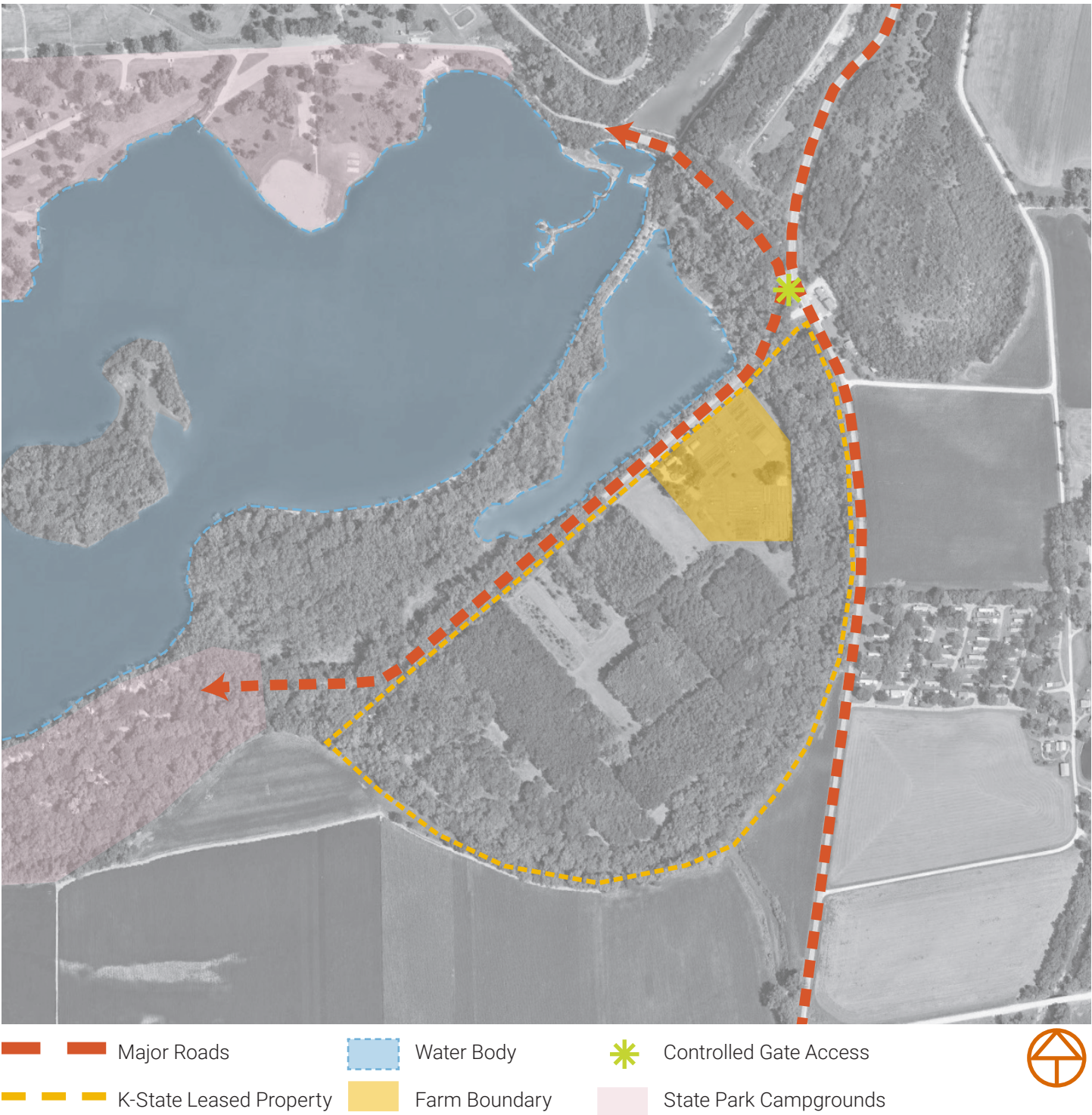
Figure 5.14: The nearby Rocky Ford Campground hosts many campers throughout the summer.



Figure 5.15: Willow Lake is located just North of Willow Lake Student Farm.

Figures 5.12 & 5.13: Tuttle Forestry existing conditions (Skabelund 2024).

Figure 5.14 & 5.15: Willow Lake and nearby campground (Brown 2023).



- Major Roads
- Water Body
- Controlled Gate Access
- K-State Leased Property
- Farm Boundary
- State Park Campgrounds

Figure 5.16: Context analysis diagram. Created with Adobe Illustrator (Brown 2025).

Overall Future Vision

The overall vision for Willow Lake Student Farm is to become a premier diversified student farm and training center for the Midwest and improve operations and visitor opportunities for K-State and the broader community. The primary design interventions include expanding the farm to include diversified farming practices and more educational opportunities for visitors as well as an overall more efficient organization of spaces. Recommendations for operations and management include an increase in department and university involvement as well providing programming opportunities to foster a stronger connection between the farm, K-State faculty and student, and the broader community. The goals below highlight the key focus areas of this project and conceptual plan for Willow Lake Student Farm.

Conceptual Master plan Goals

- 1. Provide guidance for the future development and enhancement of Willow Lake Student Farm.
- 2. Bring more awareness to the importance of Willow Lake Student Farm and foster opportunities for departmental and community involvement.
- 3. Create a space that promotes the education on sustainable agriculture and healthy food systems.
- 4. Create a design that, when completed, achieves the goals of K-State and becomes the premier small to mid-scale diversified farm in the Midwest.



Figure 5.17: Aerial rendering of overall Willow Lake Student Farm. Created with SketchUp and Lumion (Brown 2025).

K-State Next-Gen Strategic Plan

With changing leadership and a somewhat unknown future of the farm, it is important to understand the value and impact that Willow Lake Student Farm can add to Kansas State University. In 2023 K-State launched its strategic plan titled, "Next-Gen K-State". This plan was created to help guide the future of the university as a next generation land grant university (Kansas State University - The Next-Gen K-State Strategic Plan). Outlined within this plan are four main opportunity areas. Willow Lake Student Farm is essential in carrying out this plan, as it is a key example of how all these opportunities can be achieved at one location. The plan for Willow Lake Student Farm directly fits the goals of Next-Gen K-State as it will be able to provide opportunities for students, faculty, and community members to help build community health and wellness, contribute to sustainability, decrease food insecurity, and develop agricultural technologies. This masters project report provides a developed plan to achieve these goals and ensure the long-term impact of Willow Lake Student Farm on K-State and the broader community.

Opportunity Areas

Community Health and Well-Being

Underlying drivers: "establishing community sense of place, improving the health and wellness of communities, building more resilient communities, improving health disparities and outcomes, enhancing education access and outcomes, supporting economic prosperity and meeting the needs of diverse and disadvantaged communities" (Next-Gen K-State Strategic Plan).

Sustainability

Underlying drivers: "working toward a more sustainable future in water, air, energy, soil, climate change, biodiversity and community resilience" (Next-Gen K-State Strategic Plan).

Global Food Security and Biosecurity

Underlying drivers: "enhancing and expanding food production, developing safe and sustainable agricultural practices and studying animal and plant infectious diseases to improve global health and security" (Next-Gen K-State Strategic Plan).

Enabling Technologies

Underlying drivers: "innovating technologies rooted in advanced manufacturing, artificial intelligence, internet of things, big data and data science, cybersecurity, aerospace technology, creativity and smart and connected communities" (Next-Gen K-State Strategic Plan).

Farm + University Structure

The current structure of the farm in relation to the university operates fairly well. Willow Lake Student Farm is a facility within the Department of Horticulture and Natural Resources which is within the College of Agriculture at K-State. The farm is directed by Dr. Jeremy Cowan (assistant professor of Horticulture and Natural Resources) and managed by Mason Klish (full time farm manager). It is recommended that the college and department increase efforts towards funding and staffing to run the farm more efficiently and to help carry out the vision for creating a space to promote sustainable agriculture education. With Jeremy Cowan leaving in June 2025, it is also necessary to actively search for a new student farm director in which their goals similarly align with this new bold vision.

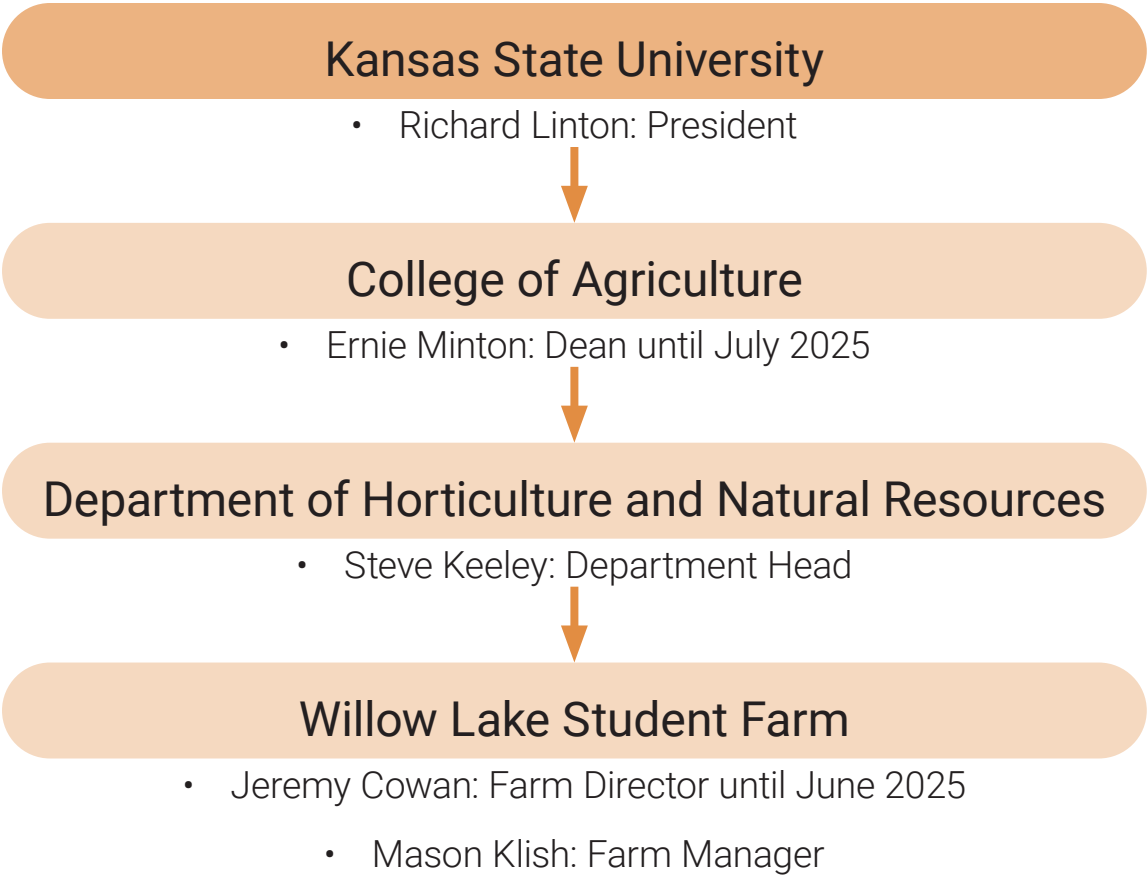


Figure 5.18: Administrative oversight diagram (Brown 2025).

Department Involvement

The Willow Lake Student Farm Club supports much of the farming operations and puts on various events, field trips, and volunteer days throughout the year. While the Student Farm Club (within the Department of Horticulture and Natural Resources) is actively involved with the farm, the new vision for Willow Lake Student Farm provides many more opportunities for interaction and involvement from other colleges and departments at K-State. Below are the recommended departments to be involved with the farm to enhance their education curriculum and research:

K-State Departments:

- Agricultural Economics
- Agronomy
- Animal Sciences and Industry
- Communications and Agricultural Education
- Entomology
- Food Science and Industry
- Horticulture and Natural Resources
- Biological and Agricultural Engineering
- Hospitality Management
- Food, Nutrition, Dietetics, and Health
- Landscape Architecture
- Art/Sculpture

Research Connections

With the proposed livestock facility, education center, and an expanded farm layout, there will be more opportunities for research at Willow Lake Student Farm. As listed above there are lots of opportunities for department involvement which should likewise increase the opportunity for research, including about farm-related learning and outreach. Below are recommendations for individual or class research opportunities within the topics of agriculture, education, and the environment:

Research Opportunities

- Economics of farming
- Local food security
- Soil management
- Water conservation
- Permaculture
- Hügelskultur
- Aquaponics
- Livestock husbandry
- Rotational grazing
- Agricultural education
- Social media in agriculture
- Farm-to-table dining
- Culinary education
- Fruit and vegetable production
- Wildlife habitat enhancement
- Pest management
- Pollinator health and habitat
- Agrivoltaics
- Farm waste management
- Food safety and processing
- Food access and nutrition
- Edible planting design and management

Community Connections

Along with increased student and faculty research and involvement opportunities there are also many more opportunities for the broader community to become more involved with the farm. Community involvement is essential for long-term success and support as well as having an impact on the local food system and public education. It is recommended that Willow Lake Student Farm expand their impact to providing education and events for youth and community members as well as K-State students. Using principles of agritourism to host events such as weddings, festivals, and school field trips can help increase the reach and presence of people at the farm. Below are the recommended opportunities and events for community involvement at Willow Lake Student Farm.

Community Involvement Opportunities

- Gardening workshops
- Culinary classes
- Community garden plots
- Seasonal festivals
- Farm-to-table dinners
- School field trips
- Youth summer camps
- Community volunteer days
- Local farmer training
- Private event reservations

Section 2: Farm Layout and Design

Proposed Conceptual Master Plan

Figure 5.19: Willow Lake Farm master plan rendering. Created with SketchUp, Lumion, and Adobe Photoshop (Brown 2025).



Farm Site Plan

The major design ideas in this conceptual plan of Willow Lake Student Farm include expanding education and research opportunities with an added education center, livestock facility, solar array with shade-loving crops area, and outdoor teaching spaces. Enhancing the operational facilities and improved layout of the farm with an organized farmyard, added equipment storage, and improved access with designated parking for cars and buses contribute to the efficiency and maximizing use of space in the design. Added pollinator gardens, livestock facility, chicken coop, and solar field help to achieve the goal of diversification of sustainable farming operations.

Legend:

- | | |
|--|--------------------------------------|
| 1. Road to Forestry Field Station | 14. High Tunnel B & Aquaponics |
| 2. Parking Lot | 15. Pollinator Meadow & Bees |
| 3. Education Center + Shop | 16. Chicken Coop |
| 4. The Yard Gathering Tables | 17. Fruit Orchard |
| 5. Farm Shop | 18. Gathering Shelter |
| 6. Wash Station & Cold Storage Building | 19. Production/Research Plots |
| 7. Equipment Storage Building | 20. Compost Bunks |
| 8. High Tunnel A | 21. Road to The Chapel (Event Venue) |
| 9. Community Garden Plots | 22. Solar Field |
| 10. The Hay Field | 23. Hgelkultur |
| 11. Outdoor Education Space & Raised Garden Beds | 24. Food Forest/Orchard Plots |
| 12. Livestock Facility | 25. Enhanced Outdoor amphitheater |
| 13. Livestock Grazing Pens | 26. Road to New SE Entry |

Figure 5.20: Willow Lake Farm site plan rendering. Created with SketchUp, Lumion, and Adobe Photoshop (Brown 2025).



Before



Figure 5.21: Before - aerial view of farm looking towards Willow Lake (Littlefield 2024).

After



Figure 5.22: After - aerial rendering of farm looking towards Willow Lake. Created with SketchUp and Lumion (Brown 2025).

Before



Figure 5.23: Before - aerial view of farm looking south. (Littlefield 2024).

After



Figure 5.24: After - aerial rendering of farm looking south. Created with SketchUp and Lumion (Brown 2025).

Enhancing Farm Operations

With a lack of organization and equipment storage, improving the farm operations is important to allow the farm to have an organized layout and provide proper protection of the necessary farm equipment. A new pull-through equipment storage building is added on the east side of the yard and has access to both the yard and garden plots. Within the back side of the education center is a garage and repair shop along with a large drive area to allow for a space to work on equipment maintenance.



Figure 5.26: Aerial rendering of the yard and farm. Created with SketchUp and Lumion (Brown 2025).



Figure 5.25: Image of Willow Lake Farm yard (Skabelund 2024).



Figure 5.27: Aerial rendering of the yard gathering space. Created with SketchUp and Lumion (Brown 2025).

Providing Educational Spaces

Education is one of the most important aspects of Willow Lake Student Farm. Improving education by providing designated spaces for teaching and learning can allow students and visitors expanded opportunities at the farm. An added education center with indoor classroom space and culinary test kitchen as well as outdoor demonstration gardens provide a specific space for meetings and structured events. A smaller gathering shelter and enhanced amphitheater provide opportunities for smaller groups to meet and learn about agricultural topics in the field.

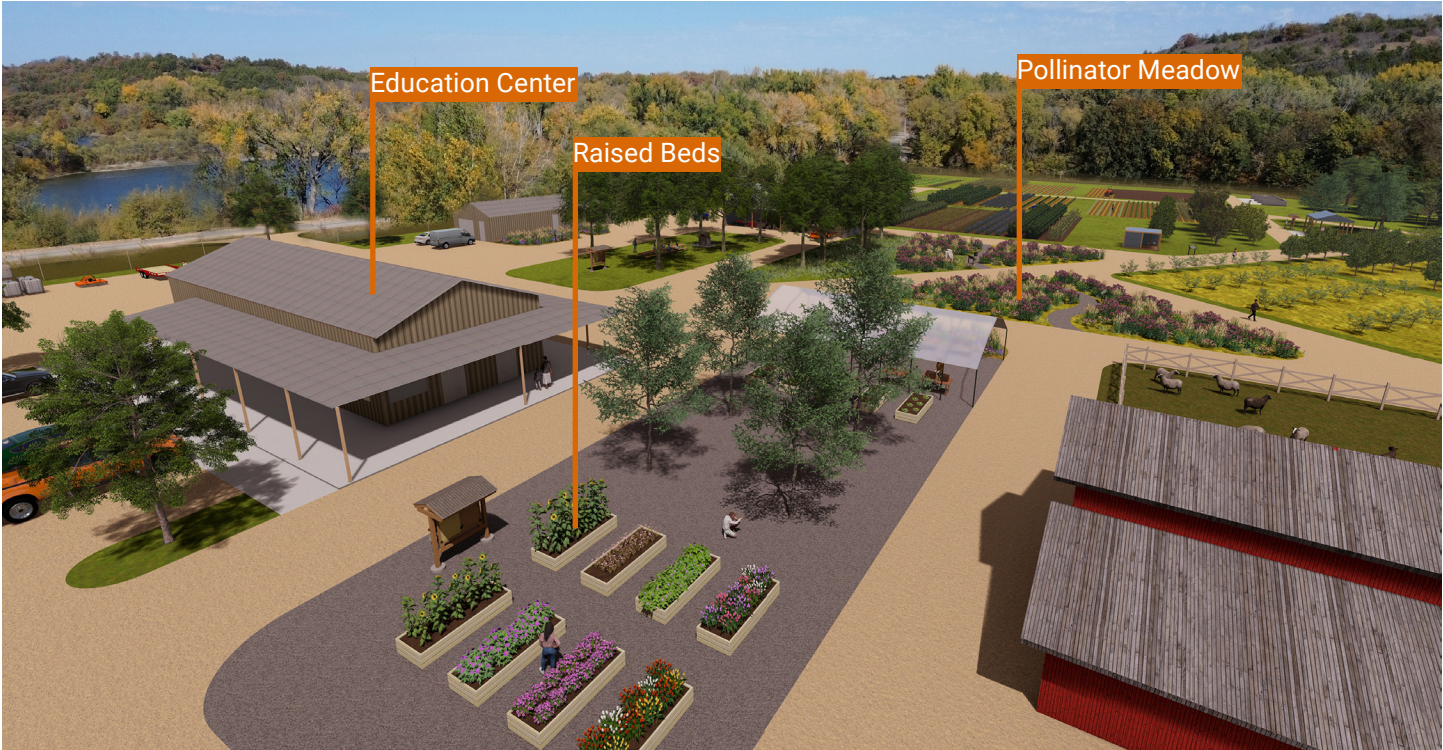


Figure 5.29: Aerial rendering of the new education space. Created with SketchUp and Lumion (Brown 2025).



Figure 5.28: Image of the current bee hives (Skabelund 2024).



Figure 5.30: Aerial rendering of the pollinator meadow. Created with SketchUp and Lumion (Brown 2025).

Aerial View of Willow Lake Student Farm

Figure 5.31: Aerial rendering of farm showing enhanced spaces. Created with SketchUp and Lumion (Brown 2025).



Aerial View of Willow Lake Student Farm

Figure 5.32: Aerial rendering of farm overlooking new education center and livestock facilities. Created with SketchUp and Lumion (Brown 2025).



Aerial View of Willow Lake Student Farm

Figure 5.33: Aerial rendering of farm showing the enhanced garden plots and added amenities. Created with SketchUp and Lumion (Brown 2025).



Signage

Signs and environmental interpretation are used to add to the visitor experience of Willow Lake Student Farm. Whether in a tour or individual exploration, educational signs can help students and visitors have a deeper educational experience at the farm. The larger kiosk signs are used for location and map graphics while the smaller signs are used to display educational information about the specific location or topic. A standard trail route and signage system are designed to maximize visitors' time at the farm and allow them to explore and learn about the various agricultural topics offered.

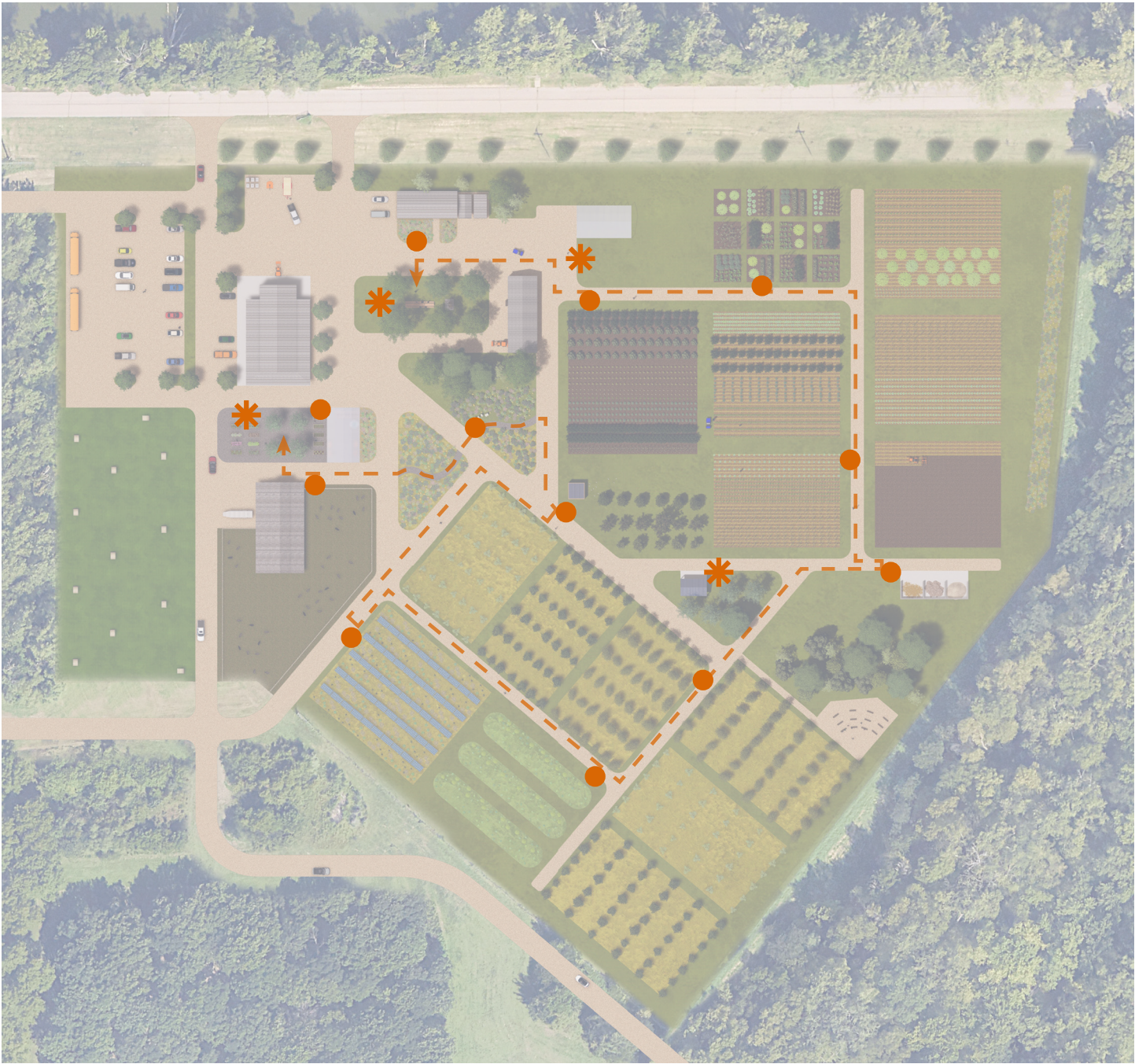


Figure 5.34: Rendering of information/map kiosk. Created with SketchUp and Lumion (Brown 2025).



Figure 5.35: Rendering of educational signage. Created with SketchUp and Lumion (Brown 2025).

Figure 5.36: Signage diagram. Created with Adobe Illustrator (Brown 2025).



 Information/Map Kiosk

 Educational Signage

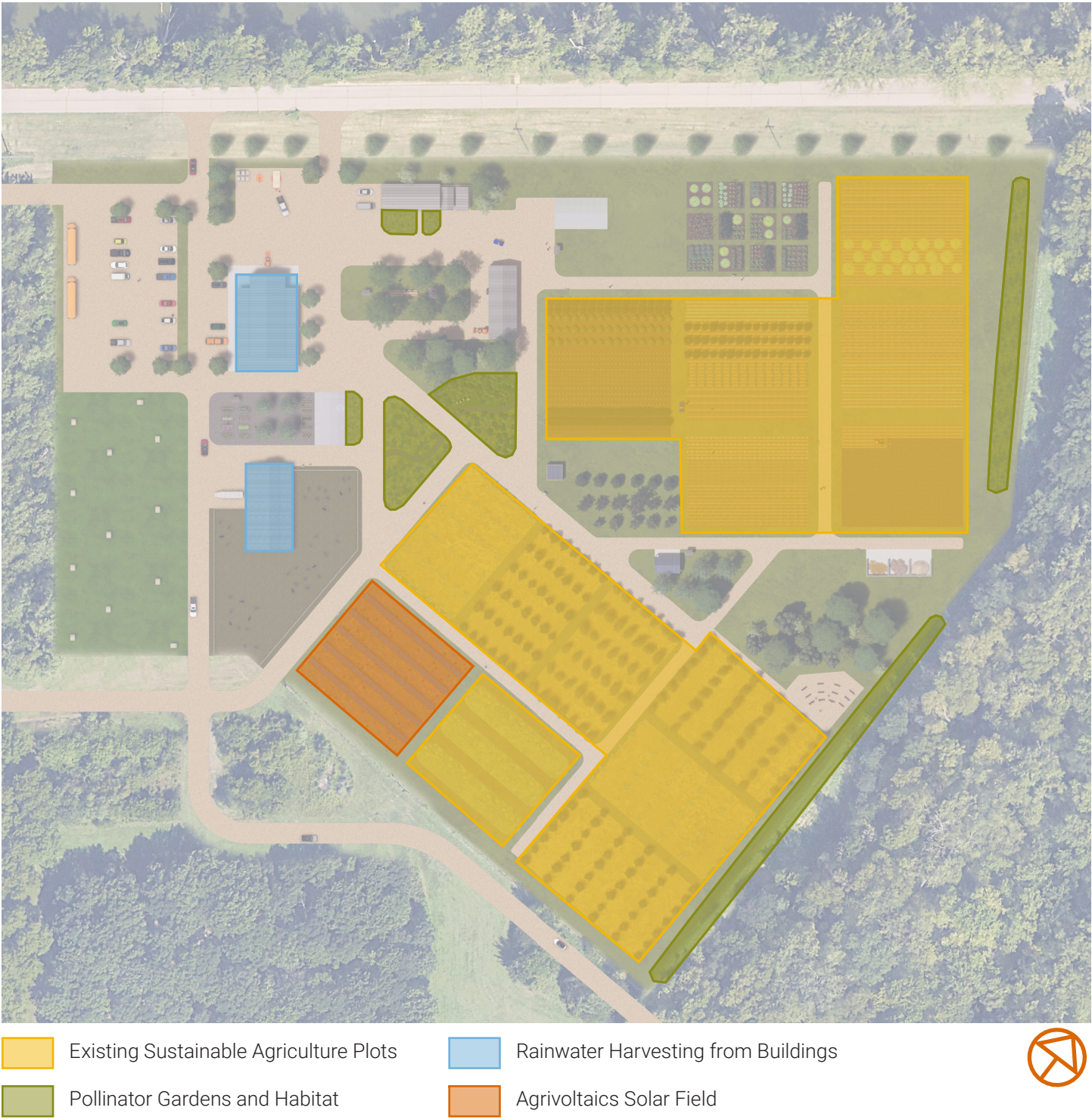
 Typical Tour Route



Sustainability Focus

Willow Lake Student Farm promotes the sustainable practice of permaculture throughout much of the farm site. Permaculture is all about the integration of ecosystems, agriculture and buildings to create a sustainable farming system. While there are many sustainable agriculture practices, the farm lacks the integration of agriculture with ecosystems and buildings. The existing sustainable elements at Willow Lake Student farm include the existing production garden plots, food forest and orchard plots, and hügelkultur. The proposed sustainable elements include rainwater harvesting from proposed buildings, added pollinator gardens and habitat, and an agrivoltaics solar field.

Figure 5.37: Sustainability diagram. Created with Adobe Illustrator (Brown 2025).



Phasing Plan

The conceptual master plan for Willow Lake Student Farm is phased based on prioritizing interventions and future funding needs, starting with the basic organization of the farm yard and enhancing existing spaces. Larger projects that require more time for funding will be constructed in later phases. Large projects include the education center, livestock facilities, and new entrance into the farm.

- Phase 1:**
- Equipment storage building
 - Gathering space
 - Pollinator gardens

- Phase 2:**
- Enhanced amphitheater
 - Gathering shelter
 - Chicken coop

- Phase 3:**
- Solar panels
 - Organized circulation

- Phase 4:**
- Education center
 - Parking lot and entrance
 - Hay field

- Phase 5:**
- Livestock facility

- Phase 6:**
- New SE Farm Entrance

Figure 5.38: Phasing diagram. Created with Adobe Illustrator (Brown 2025).



Section 3: Communication and Outreach

Crop Products and Outlets

Willow Lake Student Farm produces a variety of crops that are sold at farmer’s markets, dining halls, and the current CSA program. The distribution of these crops and other food grown at Willow Lake Student Farm is a major goal of the farm and helps with public and university support as well as financial income for the farm. A balance of donation and sales is also important to maintain financial goals and have an impact on local food security. Below is a list of the current and recommended outlets for which crops, and food can be distributed:

Current Farm Product Outlets

- Downtown Farmer’s Market
- Sale to campus dining halls
- CSA subscription program

Expanded Farm Product Outlets

- Pop-up campus farmer’s market
- Sales to local restaurants
- Donation to local food pantries
- Local schools’ lunch program
- Food for culinary classes and workshops

Potential Partnerships

Similar to crop and food production outlets supporting the farm, there are also key partnerships that can be established to further help support the farm and expand its university and community impact. Partnerships within K-State, such as departments and student organizations as well as partnerships in the community such as local schools, and non-profits can help expand the impact of Willow Lake Student Farm. These partnerships can assist in the recruitment of student volunteering and involvement with the farm.

Partnership Organizations

- K-State Research and Extension
- Cat’s Cupboard
- K-State – student clubs/organizations
- Local FFA chapters
- Kansas Farm Food Connection
- Food and Farm Council of Riley County and Manhattan
- Konza Student Table
- Flint Hills Breadbasket

Communication Recommendations

To achieve a broader university and community impact and promote interaction and agricultural education an increased effort in communication is needed. Currently the farm runs an Instagram and Facebook social media accounts to give updates on events and farm operations. An expanded effort in communication such as more frequent newsletters, a farm blog, and enhanced social media accounts can help build awareness of the farm and its great work being done. It is also recommended that the college and department increase advertising assistance with the promotion and awareness of events and activities at Willow Lake Student Farm.

Communication and Outreach

- More frequent newsletter and sent out to CSA members with each weekly pickup.
- Farm blog with updates and educational components – posted on website and social media accounts.
- Enhanced social media presence with more active posting and engagement.
- Farm map and brochure for education and to guide self-tours.
- Educational farm video series shared on website social media platforms
- Seasonal events calendar posted to website and newsletter.

Typical Schedule of Seasonal Activities

Spring Semester:

- Planting days
- Spring cleanup volunteer day
- Spring field day
- Vegetable seedlings sale
- Flower sales
- Earth Day Festival
- First CSA boxes

Fall Semester:

- Fall harvest days
- Fall cleanup volunteer day
- Fall open house
- Fall Festival
- Bonfire nights
- Thanksgiving food donation
- Holiday cooking classes

Summer:

- Harvest days
- Summer volunteer day
- Student garden program
- Youth summer camp
- Farm-to-table dinners
- Movie nights at the farm
- Weekly CSA boxes

Year-Round:

- Farm tours and field trips
- Educational workshops and sustainable farming classes
- Weddings and private events
- College department involvement
- Student Farm Club meetings
- Community gardens

Section 3: Operations and Management

Farm Management

As stated earlier in this report the future leadership of Willow Lake Student Farm is somewhat unknown with a change in the dean of the College of Agriculture and Jeremy Cowan (Student Farm Director) leaving in June 2025. Currently the farm is directed and managed by Jeremy Cowan and Mason Klish, respectively, as the primary year-round employees. While there is some student help throughout the semesters and in the summer, there is still a need for more assistance to successfully provide agricultural education opportunities and operate the farm to its full potential. With the new education center, livestock facility, and enhanced spaces in the conceptual master plan for Willow Lake Student Farm, it is recommended to increase staff to efficiently run support its continued success and impact with the university and broader community.

Staffing Considerations

Existing Staff:

- 1 Farm Director - Full time
- 1 Farm Manager - Full time
- Student Workers - Seasonal

Future Staff Recommendations:

- 1 Farm Director - Part time/ Professor
- 1 Farm Manager - Full time
- 2 Additional Farm Employees - Full time
- Student Workers - Seasonal
- 1 Education Director - Part time/ Professor
- 1 Education Manager - Full time
- 2 Tour Guides - Seasonal

Personnel Recruitment

For the recruitment of future personnel and employees the College of Agriculture and Department of Horticulture and Natural Resources can use this report to highlight the goals and future direction of the farm. A nationwide search should be conducted by the department to replace the Student Farm Director Position (with Jeremy Cowan leaving in June 2025) and fill it with someone whose goals and values line up with the farm’s mission and vision. To increase student involvement there are also various opportunities that can be provided to help with recruitment. Word of mouth, communication efforts, and an increase in partnerships, and community involvement by the farm can help build awareness of these opportunities at Willow Lake Student Farm.

Funding Opportunities

Funding and financial support for Willow Lake Student Farm is essential in maintaining the continued impact of the farm and compensating the full-time and student farm employees that are responsible for its operations. In order to begin to develop financial opportunities for the farm, promoting an increased awareness and showing the importance and impact the farm can have on K-State and the broader community is important. While much of this impact and support may not be able to occur until the conceptual master plan is completed, there needs to be an initial investment from private donors, university and college funding, and grants.

While there are some income opportunities now, once the initial investment is made, even more income opportunities will be opened up with the newly added farm facilities and possible events. It is recommended that the decision makers of the farm use this report to see the research and educational value as well as broader community impact opportunities provided by the development of the student farm. Finding proper funding solutions will be essential to carry out this bold conceptual master plan for Willow Lake Student Farm:

CONCLUSION

Limitations

This project did not go in depth into cost estimations or funding feasibility other than stating it's important and basic funding opportunity areas. This project is a conceptual plan and only provides bold ideas of what the farm can become. Ultimately, it is funding and university support that will allow this plan to be carried out. Another limitation of this project is that the design for Willow Lake Student Farm is conceptual and does not represent detailed elements such as utility locations, irrigation layout, or exact topography considerations. If more time allowed, an in-depth site analysis method could be used to locate utilities where irrigation is needed and also produce a grading plan for the farm.

Future Research Opportunities

There are many research and design opportunities to be built off of this project for Willow Lake Student Farm. This conceptual master plan for the farm touches the surfaces of a variety of elements that should be considered in the future. There is a great opportunity to expand upon this foundational project and collaborate with other disciplines to design the many spaces of the farm in detail. Feasibility studies and cost estimates are also among the next steps to begin making efforts toward carrying out this vision for Willow Lake Student Farm.

Concluding Thoughts

With the growing disconnect between people and the environment, campus farms can be used as the perfect setting for agricultural education, allowing people to connect with nature and learn about sustainable food production. There is a great opportunity to develop Willow Lake Student Farm to promote the education of sustainable agriculture and have an impact on the local food system. The main takeaway from this research project and conceptual master plan is the importance and opportunity that Willow Lake Student Farm has for Kansas State University and the broader community. This vision for the farm will help achieve both the mission of the farm to become a premier student farm of the Midwest and also achieve the mission of the Next-Gen K-State opportunity areas. The two most important factors involved in working towards developing this vision are support and funding. Support from K-State faculty and students, leadership and decision makers, and the broader community will in turn lead to more funding opportunities. With changing leadership and a somewhat unknown future for the farm this visionary document can be used as a guide for raising awareness of the future development and impact opportunities at Willow Lake Student Farm.

REFERENCES

Association of Public & Land-Grant Universities. "Land-Grant University FAQ." Accessed March 18, 2025). <https://www.aplu.org/about-us/history-of-aplu/what-is-a-land-grant-university/>

Ballantyne, Roy, and Karen Hughes. 2003. "Measure Twice, Cut Once: Developing a Research-Based Interpretive Signs Checklist." *Australian Journal of Environmental Education* 19:15–25. <https://www.jstor.org/stable/44656361>

Cedar Circle Farm and Education Center. "About." Accessed March 14, 2025. <https://cedarcirclefarm.org/>

Denver Botanic Gardens. "Chatfield Farms." Accessed March 14, 2025). <https://www.botanicgardens.org/chatfield-farms>

EPA. "The Inside Story: A Guide to Indoor Air Quality." Accessed October 18, 2024. <https://www.epa.gov/indoor-air-quality-iaq/inside-story-guide-indoor-air-quality>

Hazan, Sara and Jeremy Cowan. 2020. "Establishing hügelkultur for season extension research, specialty crop production, and permaculture education." *Urban Food Systems Symposium*. <https://newprairiepress.org/ufss/2020/proceedings/24>

Joshi, Rhea. 2023. "Permanent + Agriculture = Permaculture." *Earth Talk*, English Ed., March 30. <https://www.proquest.com/docview/2798772842/abstract/79AF3AB1D6384C6CPQ/1>.

Kansas State University. "The Next-Gen K-State Strategic Plan." Accessed March 31, 2025 <https://www.k-state.edu/next-gen/plan/>

KSU Horticulture and Natural Resources. "Tuttle Forestry Research Center." Accessed March 31, 2025. <https://hnr.k-state.edu/about/facilities/tuttle-forestry/>

KSU Horticulture and Natural Resources. "Willow Lake Farm." Accessed March 31, 2025. <https://hnr.k-state.edu/about/facilities/willow-lake/>

Kuo, Ming, Michael Barnes, and Cathy Jordan. 2022. "Do Experiences with Nature Promote Learning? Converging Evidence of a Cause-And-Effect Relationship." In *High Quality Outdoor Learning: Evidence-Based Education Outside the Classroom for Children, Teachers and Society*, edited by Rolf Jucker and Jakob von Au, 47-66. Switzerland: Springer nature Switzerland AG.

Largo-Wight, Erin, Caroline Guardino, Peter S. Wludyka, Katrina W. Hall, Jeff T. Wight, and Julie W. Merten. 2018. "Nature Contact at School: The Impact of an Outdoor Classroom on Children's Well-Being." *International Journal of Environmental Health Research* 28 (6): 653–66. <https://doi.org/10.1080/09603123.2018.1502415>.

Leis, Anna, M. Susie Whittington, Mark Bennett, and Matthew Kleinhenz. 2011. "Student Farms at United States Colleges and Universities: Insights Gained from a Survey of the Farm Managers." *NACTA Journal* 55 (1): 9-15. <https://www.jstor.org/stable/nactajournal.55.1.9>

Matthaei Botanical Gardens and Nichols Arboretum. "Campus Farm." Accessed March 14, 2025. <https://mbgna.umich.edu/campus-farm>

McMahon, Rebecca, Raymond Cloyd, Megan Kennelly, and Londa Nwadike. 2023. *Kanas Garden Guide*. Kansas State University: K-State Research and Extension.

Pierssene, Andrew. 1999a. "Why Interpret? Aims and Motivations." In *Explaining Our World: An Approach to the Art of Environmental Interpretation*. London: E & FN Spon.

Pierssene, Andrew. 1999b. "Frog Into Prince: Turning Information Into Interpretation." In *Explaining Our World: An Approach to the Art of Environmental Interpretation*. London: E & FN Spon.

Ratasky, Stephen, Michelle Schroder-Moreno, Jay Jayaratne, Lucy Bradley, Julie Grossman, and David Orr. 2015. "Identifying Key Characteristics for Student Farm Successes through a National Delphi Study." *NACTA Journal* 59 (2): 96-103. <https://www.jstor.org/stable/nactajournal.59.2.96>.

Svobodová, Hana. 2019. "The Concept of Outdoor Education and its Relationship with the School curriculum." In *Outdoor Education in Geography: A Specific Educational Strategy*. Brno, Czech Republic: Masaryk University.

Sznajder, Michal, Lucyna Przezborgska, and Frank Scrimgeour. 2009a. "Agritourist Services and Products." In *Agritourism*. CAB International.

Sznajder, Michal, Lucyna Przezborgska, and Frank Scrimgeour. 2009b. "The Concept of Agritourism." In *Agritourism*. CAB International.

The University of Arizona. "Tucson Village Farm." Accessed March 14, 2025. <https://tucsonvillagefarm.arizona.edu/>

Trapp, Suzanne, Michael Gross, and Ron Zimmerman. 1994a. "Trail Interpretation." In *Signs, Trails, and Wayside Exhibits: Connecting People and Places*. Stevens Point, WI: UW-SP Foundation Press, Inc.

Trapp, Suzanne, Michael Gross, and Ron Zimmerman. 1994b. "Connecting People and Places." In *Signs, Trails, and Wayside Exhibits: Connecting People and Places*. Stevens Point, WI: UW-SP Foundation Press, Inc.

Trapp, Suzanne, Michael Gross, and Ron Zimmerman. 1994c. "Trails – Corridors to Adventure." In *Signs, Trails, and Wayside Exhibits: Connecting People and Places*. Stevens Point, WI: UW-SP Foundation Press, Inc.

Tyo, Ethan, Matthew Potteiger, and Catherine Bukowski. 2024. "Eating Ecologies: Growing Edible Green Infrastructure and Environmental Justice." Conference Lecture. Washington D.C. October 6, 2024.

UC Davis Agricultural Sustainability Institute. "Our Farm." Accessed March 14, 2025. <https://asi.ucdavis.edu/programs/sf/our-farm>

Williams, Dilafruz R. and Jonathan D. Brown. 2012a. "Learning Gardens and Life's Lessons." In *Learning Gardens and Sustainability Education: Bringing Life to Schools and Schools to Life*. New York and London: Routledge

Williams, Dilafruz R. and Jonathan D. Brown. 2012b. "Fostering Curiosity and Wonder." In *Learning Gardens and Sustainability Education: Bringing Life to Schools and Schools to Life*. New York and London: Routledge

Williams, Dilafruz R. and Jonathan D. Brown. 2012c. "Embracing Practical Experience." In *Learning Gardens and Sustainability Education: Bringing Life to Schools and Schools to Life*. New York and London: Routledge

Williamson, Francesca A., Amber J. Rollings, Grant A. Fore, Julia L. Angstmann, and Brandon H. Sorge. 2023. "Building capacity for socio-ecological change through the campus farm: a mixed methods study." *Environmental Education Research* 29 (2): 212-231. <https://doi.org/10.1080/13504622.2022.2070604>

APPENDICES

Appendix A: Interview Questions

Set 1 Questions: Agricultural Non-Profit Workers

- **Educational Programming**
 - What agricultural education or training programs do you offer to visitors?
 - What educational programs have proven to be the most successful?
 - How do you manage your programs and events to provide variety throughout the year or for repeating visitors?
 - How do you incorporate hands-on learning into your educational programs and activities?
 - What are the challenges when engaging with different age groups? How do you best provide educational opportunities for all ages?
- **Visitor Engagement and Impact**
 - What are some of the most important topics/lessons that should be taught to your visitors?
 - How are sustainability topics such as green infrastructure, water management, or pollinators included in the educational experience?
 - Do you conduct any educational farm tours? If so, how long does a tour last? What are the topics covered and experiences of each tour?
- **Communication and Outreach**
 - What communication and outreach methods do you use to connect to people and keep them up to date on ongoing activities and events?
 - Approximately how many visitors or participants do you engage with each year? How many people do you have for some of your larger events?
- **Broader Impact**
 - Do you collaborate with any local schools, universities, or other organizations? If so, how has that partnership experience gone?
 - What impact do you feel the organization has on the broader community/region?
 - What other thoughts do you have about this topic or the issues we have discussed?
 - What suggestions do you have for those managing Willow Lake Student Farm?

Set 2 Questions: Student/Campus Farm Directors

- **Farm Operations and Management**
 - What are the primary operations and purpose of the farm? (i.e. crop production, fruit and vegetable, livestock, etc.)
 - How do you balance farm production with education and research goals?
 - How many staff members and students are involved in the operations of the farm?
 - What strategies do you use to ensure financial stability for the farm? Are there specific outlets used for crop/farm products?
- **Educational Programming**
 - What role does the farm play in student education and research? Are there specific courses or programs that are directly involved with the farm?
 - What types of learning opportunities are offered to students and visitors? What educational elements have proven to be the most successful?
- **Visitor Engagement and Impact**
 - What are some of the most important topics/lessons that should be taught to your visitors?
 - How are sustainability topics such as green infrastructure, water management, or pollinators included in the visitor experience? Are there any areas designed or used specifically for demonstrations?
 - Do you conduct any educational farm tours? If so, how long does a tour last? What are the topics covered and experiences of each tour?
- **Communication and Outreach**
 - What communication and outreach methods do you use to bring in visitors and keep them up to date on ongoing activities and events?
 - Approximately how many visitors or participants do you engage with each year? How many people do you have for some of your larger events?
- **Broader Impact**
 - Do you collaborate with any local schools or other organizations? If so, how has that partnership experience gone?
 - What impact do you feel the farm has on the broader community/region?
 - What other thoughts do you have about this topic or the issues we have discussed?
 - What suggestions do you have for those managing Willow Lake Student Farm?

Appendix B: IRB Approval Form



Office of Research Integrity,
Compliance and Security

TO: Lee Skabelund
Landscape Archit & Comm Plan
Manhattan, KS 66506

FROM: Lisa Rubin, Chair
Committee on Research Involving Human Subjects

DATE: 02/10/2025

RE: Proposal Entitled, "Cultivating the Future: A Vision for Willow Lake Student Farm."

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:Exempt 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.

Electronically signed by Lisa Rubin on 02/10/2025 4:38 PM ET

Appendix C: IRB Verbal Consent Script

Cultivating the Future: A Vision for Willow Lake Student Farm

This interview is for academic research towards my graduate student master’s report. The purpose of this research is to gather information to help create a strong conceptual master plan and future visioning document for K-State's Willow Lake Student Farm. This research will also help promote sustainable agriculture education, raise awareness of the farm’s opportunities, and ensure the farm’s continued impact with K-State and the broader community.

Your participation will involve one interview that will last between 45 minutes to 1 hour. Information from the interview will be documented through personal notes and an audio recording of the Zoom meeting to be used in the master’s project and report. The information you provide will remain anonymous (except being known only by the graduate student and principal investigator) and your identity will not be disclosed in the final master’s report. Once the study is complete identifiers might be removed from your responses. After the removal, this information could be used in future research without further consent.

This research is expected to have no risks involved and you are not required to answer any questions that may make you feel uncomfortable. The benefits of your participation include the opportunity to provide expertise that will go towards envisioning the future of K-State's student farm. This project aims to explore information that can improve the overall operations, management, and educational opportunities for students and the community.

If you have any questions about the research contacts below are provided.

- Principal Investigator:** Lee Skabelund
- Associate Professor – Landscape Architecture and Regional & Community Planning
 - lskab@ksu.edu | 785-532-5961

- Interviewer:** Carter Brown
- Graduate Student – Landscape Architecture and Regional and Community Planning
 - carter01@ksu.edu | 785-346-4215

- IRB Chair:** Lisa Rubin
- Chair – Committee on Research Involving Human Subjects
 - 785-532-3224

This project is academic research and your participation in this interview is entirely voluntary. You may withdraw your consent at any time without explanation or penalty. Please confirm you have received a copy of this verbal consent script and interview questions. May I get your verbal consent to proceed with the interview?