



**SAVANNA
INSTITUTE**

Phoenix Farm Case Study

Farm Narrative:

Phoenix Farm is a diversified food farm located in Iowa City, Iowa. The 63 acre farm was purchased in 2013 by a local couple interested in providing opportunities to beginning farmers who needed access to land to grow food. When the farm was first bought, the land was being managed for growing conventional row crops including corn and soybeans. The sloped topography and silt comprised soils on this farm allowed for high levels of erosion and loss of topsoil. In 2014, a local farmer leased the land and began planting a diversified landscape of perennial crops including chestnut, pawpaw, persimmon, elderberry, walnut, apple, pear, honeyberry, and other fruit or nut producing trees and shrubs. Steep slopes were redesigned to help capture water and reduce opportunities for soil erosion to occur. Land between rows of perennial crops were seeded to perennial pasture vegetation to cover bare ground.

Iowa Geographic Map Server



Iowa Geographic Map Server



Over the years, the new landscape grew, and perennial crops continued to establish their roots in the once heavily tilled soils. In 2017, the tenant had to leave the farm along with their management of the established crops. It took several years for the landowners to find a new tenant for the farm. In 2020, a man named Santos Lopez began leasing the farm after spending a couple of years growing small plots of vegetables on the property. Currently, Santos is living on the farm in a newly constructed home and is farming the land. Within this time, the landowners donated the 63 acre farm to the Sustainable Iowa Land Trust (SILT) to protect the land in perpetuity. They did this to make sure that the land stayed in

sustainable food farming and to prevent the land from being converted back to conventional crops. Santos will continue to live and farm on the land for as long as he desires.

SILT and Santos are working together to establish a 20-year lease to provide security and opportunity for Santos while the perennial crops come into full production. Santos' farm goals include establishing silvopasture systems on the property using currently established perennial crops as well as continuing to add other crops through time. He is currently raising five Katahdin sheep and rotationally grazing them across the farm using Premier1 electronet fencing and solar powered battery chargers. Santos would like to increase the amount of grazing across the farm as he continues to build farm income. He also raises several dozen chickens each year and allows them to graze around perennial plantings near his farmstead.

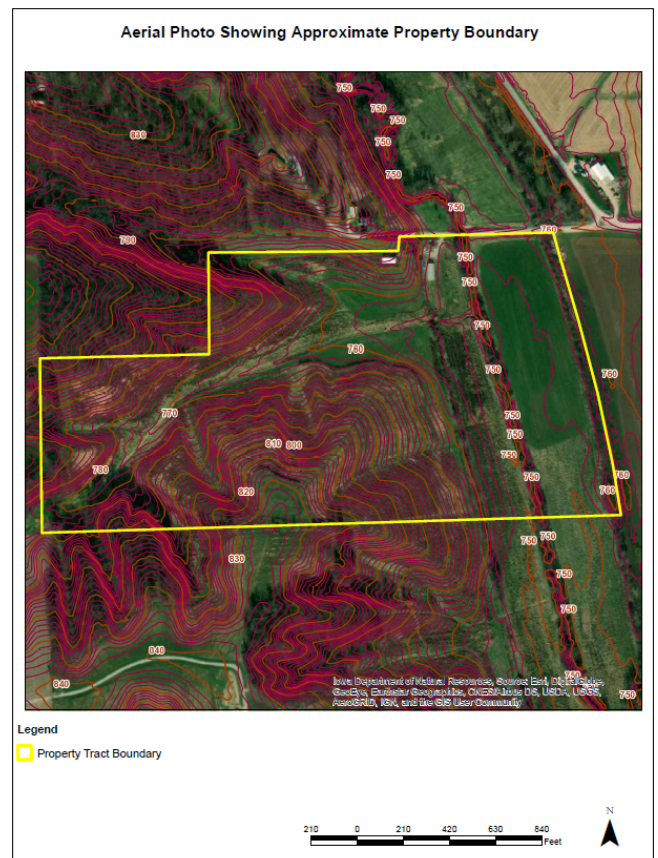
When the farm was purchased in 2013 the landowners and tenant planned to create enterprises that were diverse, sustainable, and profitable. They wanted to incorporate food systems that would last for decades while protecting the natural resources of the property including water, soil, and wildlife habitat.

The history of establishing Phoenix Farm is difficult to detail due to the absence of the previous tenant and landowners. Data regarding the initial setup of crops and management systems on this farm has been lost and SILT has not been able to recover this information. Due to this, this Case Study relies on currently established systems and pieces of information gathered from people who were present when this farm was being established. Systems and enterprises were built and managed for



several years before the previous tenant left. Crops were left unmanaged between the years 2017-2021. Because of this lapse in early management, many crops either died or were stunted by weeds and wildlife pressure. However, many of the crops have survived and there are opportunities to continue to manage the farm for agroforestry food production.

Establishment:



The tenant used the sloped topography of the property to design systems that could maintain perennial plantings and pasture in the same area. By planting along the contour of the sloped landscape, planting space was used efficiently while making it easier to manage using machines on less sloped ground. Tree and shrub seedlings were planted using a mechanical tree planter rented from the state DNR.

The tenant wanted to plant as many trees as possible with the hopes that the strongest trees would survive and other trees would be thinned out through time. Trees, such as chestnuts, are recommended to be planted at 20 to 40 foot spacing to provide ample space for canopy growth and sunlight capture. Other species including elderberry and honeyberry were planted between these spaces since they do not require as much space and do not reach the mature height of a chestnut tree. The tenant interplanted this way throughout the farm hoping to increase the diversity of food crops.

Plantra tree tubes were used to help protect immature plants from wildlife pressure including deer, rabbits, and rodents. The tree tubes are plastic and come with a fiberglass stake to secure the tree tube vertically over the crop. The tubes are an opaque white with open slits allowing sunlight and air to be able to penetrate through to the plant. As the plant grows, the tubes provide support for the plant to grow straight up and out of the tube. Tubes can be pulled from plants once they reach a more mature age. There are perforations along the tube that break open when the trees diameter reaches the diameter of the tube size. Tree tubes can also be taken off before this happens. Tree tubes can be reused for other immature crops.

Wood chips were used as mulch to cover the area directly around the base of the plants. Wood chip mulch acts as a cover to suppress weeds and to also allow water to pass through to the plant roots. Mulch is reapplied every year to provide continual weed suppression as the wood chips break down each year.

There are no irrigation systems established for the crops and rainfall is the primary source of irrigation throughout the orchard.

Enterprise Potential:

Since the farm's management and ownership has changed over the last 6 years and the data for species and number of crops planted has not been recovered, it is difficult to determine the overall profitability of the farm's profitability from when it was first established. This case study will focus on describing the chestnut enterprise's estimated establishment costs and potential income since chestnuts are the primary perennial crop on the farm .

Chestnuts:

Chinese chestnuts are the primary species planted across the farm. There are approximately 350 chestnut trees planted around the farm. Expenses for establishing the chestnut trees have been lost, but predictions for establishing a similar chestnut enterprise are described below.

Potential Expenses -

350 chestnut tree seedlings ([Red Fern Farm](#), Iowa) - \$15/seedling

350 trees x \$15/tree = \$5,250

350 [Plantra](#) tree tubes + stake, 10-pack (OPTIONAL) -\$8.80/tube + stake

350 tubes & stakes x \$8.80 = \$3,080 (shipping not included)

Planting labor including: planting tree, tubing tree, mulching tree – 10 minutes/tree

60 labor hours x \$15/hour = \$900

Estimated establishment expenses: \$9,230

Potential Income –

Irrigated chestnut orchards can yield up to 2,000 pounds per acre by age 12^[1] with approximately 108 chestnuts per acre. Since this specific enterprise is not irrigated this case study will assume 1000 pounds per acre by age 12.

(350 trees / 108 trees per acre) x 1,000 pounds per acre = 3,241 pounds of chestnuts

According to the [Agricultural Marketing Resource Center](#) the value of chestnuts at wholesale ranges between \$0.75 - \$2.50/pound. The value of chestnuts sold for retail ranges between \$2.00 to \$5.00^[2]

3,241 pounds of chestnuts x \$1.50/pound (wholesale) = \$4,862

3,241 pounds of chestnuts x \$4.00 (retail) = \$12,964

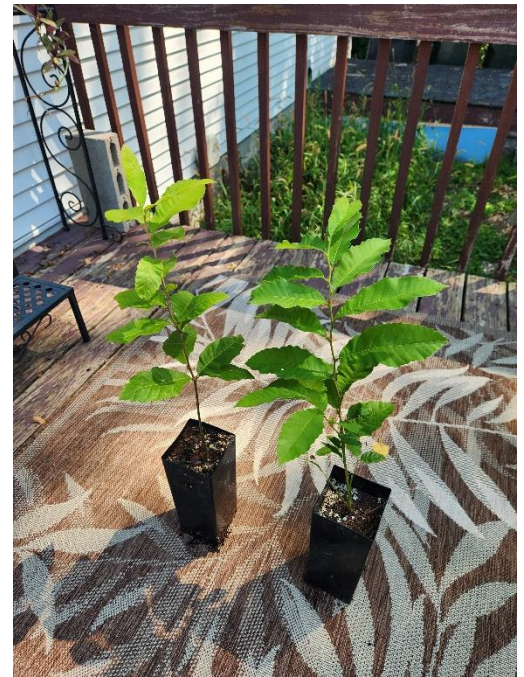
This case study will not detail potential ongoing expenses for the chestnut trees on Phoenix Farm due to unknown management strategies and time taken by the current tenant to manage them.

Other expenses for the ongoing management of the chestnut enterprise may include labor for pruning, labor for mulching, labor for harvesting, labor for selling, labor for mowing, fuel, and harvesting equipment.

Additional Considerations:

The current tenant, Santos, is also managing other crops on the farm including pawpaw, elderberry, persimmons, and honeyberries. The data for these crops and their relevant history of management is more unknown compared to the chestnut enterprise. These types of perennial crops may require less or more management than chestnuts in any given year. Marketing for other specialty crops will vary depending on market availability and regional interest in the crops.

Santos may be able to create opportunities for profitability from these crops by establishing production areas to sell seedlings to other growers. Using seed stock from the farm could help enhance income when paired with marketable fruits or nuts. With local seedstock for species like Chinese chestnuts, pawpaw, and persimmons being sold at \$15/seedling a small-scale farmer could greatly increase profitability without marketing fruits and/or nuts specifically.



Conclusion:

Phoenix Farm is continuing to develop systems to create profitable agroforestry enterprises that are sustainable through time. The farm already has established perennial crops including chestnuts, pawpaw, elderberry, honeyberry, persimmon, apples, pears, and other fruit or nut bearing crops. This case study primarily focuses on the conversion of this farm's management from conventional crops to an agroforestry and the importance of creating long-term, perennial enterprises. Crop management for species including Chinese chestnuts are described.

Santos, the current farmer, will continue to manage the farm and SILT will remain the landowner. Over time, landowner and tenant will work together to build the farm's agroforestry systems. This will include creating long term management plans for the already established enterprises, finding markets for harvestable crops, and working with other organizations to provide educational opportunities for what agroforestry systems can look like in Iowa.

CITATIONS

1. Hunt, K, Gold, M., Reid, W. & Warmund, M. Growing Chinese Chestnuts in Missouri. (2012)
2. Romero, C. Chestnuts. Agricultural Marketing Resource Center (2015). Available at <https://www.agmrc.org/commodities-products/nuts/chestnuts> (Accessed: 22nd August 2023)