

California Silvopasture Producer Case Study:

Diversified drought-tolerant silvopasture in oak savanna rangeland



PT RANCH

Producer:

Molly Taylor, Ranch Manager, PT Ranch

Location:

Ione, Amador County, CA

PT Ranch is a 500-acre livestock operation in Ione, California, with a history that includes racehorse breeding, irrigated cattle leases, and rangeland leases. Since 2018, the farm has been managed by third-generation rancher Molly Taylor and owned by her parents, Emily and Ned Taylor. The main revenue sources are currently pastured sheep, pigs, and poultry – including chickens, ducks, and turkeys. PT Ranch also works with contract grazers on a portion of the land and sells small quantities of olive oil, lavender, and honey.



Photo: M. Taylor

Healthy pasture is the key to PT Ranch's success. The main farm buildings and residences are pictured in the distance.

Motivation

Molly Taylor's interest in silvopasture stemmed from its ability to provide both environmental and financial benefits to her family farm. Through this diversified system, PT Ranch could simultaneously work to restore their native oak savanna while also sequestering carbon and generating diverse, long-lasting revenue streams. Her curiosity led her to work with Eliza Greenman of [Fruit and Fodder LLC](#) to implement multiple silvopasture systems on the property in January 2021.

These silvopasture systems were inspired by traditional arid system models and customized specifically for California rangeland, with the objective of providing shade and fodder for livestock, advancing erosion control and carbon sequestration, and introducing new revenue streams in the form of value-added tree products. Taylor sees the addition of trees as a way to support and increase the farm's

production of livestock while adding a diversity of fruit crops, increasing olive oil production, and developing a u-pick orchard for agrotourism.

Management

Tree seedlings are protected by tubes and electronet is used to further safeguard the seedlings during grazing. In plantings where long-term protection is needed, Taylor uses permanent fencing instead of electronet. Taylor currently relies on heavy mulching (no less than 3 inches deep) to combat grass pressure until the trees are established and can be grazed without electric fencing.

The biggest challenges in establishing and maintaining these different silvopasture systems at PT Ranch have been (1) protecting small trees and (2) managing water limitations. With an average annual rainfall of 21 inches/year, all four of the systems currently rely on drip irrigation, which Taylor plans to phase out after three years. The four systems – fruit orchard, pig fodder bank, olive orchard, and irrigated pasture hedgerows – are detailed below.



Photo: M. Taylor

Ranch Manager Molly Taylor checks on a row of young trees in the fruit orchard silvopasture system.

Fruit orchard

Goal: Establish a diversified orchard that will produce marketable fruit while also allowing the rotation of livestock through the alleys.

Spacing: 1,000 trees planted in 25 rows, with an irrigation ditch bisecting the middle of the orchard at a diagonal. The rows are 26' apart to allow for 2 panels (12' each) of electric fence to be set up across the alleys. Serviceberry, Elderberry, Cascara, Pomegranate, and the fig varieties are all spaced 8' apart within the tree row. Goji is 3' apart within the row and the Dwarf Everbearing Mulberry trees are 5' apart.



With the seedlings protected by electronet, sheep graze the fruit orchard silvopasture system.

Fruit orchard tree species:

- Utah Serviceberry (*Amelanchier utahensis*)
- Olympian Fig (*Ficus carica* 'Olympian')
- Violette de Bordeaux Fig (*Ficus carica*)
- Magnolia Fig (*Ficus carica*)
- Goji berry (*Lycium barbarum*)
- Dwarf Everbearing Mulberry (*Morus alba*)
- Wonderful Pomegranate (*Punica granatum*)
- Cascara (*Rhamnus purshiana*)
- Blue Elderberry (*Sambucus cerulea*)

Pig silvopasture (fodder bank)

Goal: Restore mature oak savanna. This system includes a variety of nitrogen-fixing, fast-growing species that will offer shade and nitrogen to the area around where the oak is planted, while also providing fodder to the pigs. This system draws inspiration from the Spanish Dehesa, where oak savannas produce acorns to feed pigs for part of the year.

Spacing: 1,950 trees, with 6 double rows of trees planted 8' apart and spaced on contour 60' away from the next double row. Within each row, trees were planted 4' apart.

Tree Species:

- Blue Blossom (*Ceanothus*)
- Cascara (*Rhamnus purshiana*)
- Desert Willow (*Chilopsis linearis*)
- Dwarf Coyote Brush (*Baccharis pilularis* 'Pigeon Point')
- Holm Oak (*Quercus ilex*)
- Kurrajong (*Brachychiton populneus*)
- Mimosa (*Albizia julibrissin*)
- Tipu (*Tipuana tipu*)
- Wedgeleaf / Buckbrush (*Ceanothus cuneatus*)
- Wood Rose (*Rosa gymnocarpa*)



Pigs enjoy deep shade from a field of black walnut and oaks. The pigs are a crossbreed of Berkshire and Duroc.

Olive orchard

Goal: Provide shade and fodder for rotating livestock, produce top-shelf olive oil, and sequester carbon. The planting expands PT Ranch's existing orchard and olive oil production.

Spacing: 1,280 olive trees (*Wilson Olive, Olea europaea 'wilsonii'*) are spaced 8' within rows and 16' between rows. Most of the rows are on contour. Thinning, in the form of pollarding, will be implemented once the trees start to crowd one another (>10 years) and will leave every third tree to give the trees an eventual in-row spacing of 24'.



Photo: M. Taylor

Two rows of trees make up each hedgerow along the perimeter of PT Ranch's irrigated paddocks, which will provide shade and fodder for the cattle and allow for increased stocking density over time.

Irrigated pasture hedgerows

Goal: Provide shade and fodder to cattle along the perimeter of the irrigated paddocks.

Spacing and species: 1,300 trees along the perimeter of five paddocks consisting of two rows:

- Russian Mulberry (*Morus alba 'tartarica'*), spaced 8' apart in the row.
- California Black Walnut (*Juglans hindsii*), interplanted with mulberry every fourth tree (32' spacing between black walnut seedlings).

To learn more about PT Ranch visit: <https://www.ptranch.co/>

Publication made possible by a grant number #20-DG-11132540-019 from the U.S. Department of Agriculture (USDA), Forest Service, National Agroforestry Center, under the authority of the Cooperative Forestry Assistance Act of 1978. In accordance with Federal law and U.S. Department of Agriculture policy, this institution is prohibited from discriminating on the basis of race, color, national origin, sex, age, or disability. (Not all prohibited bases apply to all programs.) To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, Room 326-W, Whitten Building, 1400 Independence Avenue, SW, Washington, DC 20250-9410 or call (202) 720-5964 (voice and TDD). USDA is an equal opportunity provider, employer, and lender.