

California Silvopasture Producer Case Study:
Pasture-raised meat operation restoring oak savanna through silvopasture



Producer: Guido Frosini
Owner/Operator, True Grass Farms

Location: Tomales, Marin County, CA

Established in 2016, True Grass Farms is a family-owned and operated pasture-raised meat operation in the coastal valleys of northwestern Marin County. Guido Frosini manages the land and the small scale finished meat production alongside his wife, Emily.

True Grass Farms manages 850 acres across three properties, the majority of which are leased. Frosini holds the deed to the main property of 120 acres, where he is currently experimenting with oak savanna silvopasture. True Grass Farms also includes seven miles of riparian buffer and two miles of hedgerows, established for wind protection and pollinator habitat.



Cattle graze at True Grass Farms, which is located in a region that historically has been overgrazed.

The main revenue sources for the farm are currently pastured cattle and sheep. The meat products are all sold directly to consumers via the farm stand, farmers markets, and a growers' cooperative. Products include a variety of meat cuts, including less common cuts that Frosini encourages consumers to consider eating.

Motivation

A permaculture workshop on the property and an interest in the dehesa system – the highly biodiverse, savanna-like agroecosystem of southern Spain that is dominated by Mediterranean evergreen oaks – inspired Frosini to plant the first round of trees: cork oaks (*Quercus subur*). Since the initial planting in 2017, he has planted four acres of trees with an average of 60 trees per acre and manages a total of 80 acres as part of the oak savanna silvopasture.

In addition to eventually providing shade and shelter from wind, Frosini hopes the trees can provide nutrition to livestock during the region’s long dry summers, through their nutrient rich leaves.

Beyond the direct benefit of supplemental and dry season forage, Frosini’s ultimate motivation in pursuing silvopasture is to restore the land to coastal prairie and oak savanna. For True Grass Farms, integrating trees provides a bridge to restoring the ecosystem by building soil health and increasing carbon storage through the return of biodiversity, both above and below ground. Frosini also credits the tree planting project with improving his monitoring, as it has bolstered his awareness and understanding of ecosystem processes and parts of the ranch that hadn’t previously been areas of focus. Additionally, Frosini has observed a notable increase in biodiversity (particularly richness and abundance of bird species), which he has been able to measure through a collaboration with Point Blue Conservation Science. This change alone has yielded more biofeedback and, thus, more information for Frosini to draw on when making land management decisions.

Tree species:

- Oak: Coast Live Oak (*Quercus agrifolia*), Cork Oak (*Q. subur*), Holm Oak (*Q. ilex*), Valley Oak (*Q. lobata*)
- Chestnut: American (*Castanea dentata*), European (*Castanea sativa*)
- Hawthorn varieties
- Locust: Black (*Robinia pseudoacacia*), Sweet/Honeylocust (*Gleditsia triacanthos*)
- Willow: Arroyo (*Salix lasiolepis*) and local varieties selected for upright growth pattern

Livestock species:

- Cattle: Brama, Wagu, Angus, Shorthorn
- Sheep: Katahdin
- Chicken: Layers and Broilers (including recent experimentation raising high-end Bresse variety)
- Geese: American Buff

Other perennials:

Blueberry and Elderberry (in hedgerows)



American Buff geese graze sections of the farm with the help of a mobile coop and temporary electric fencing.



Owner/operator Guido Frosini points out how the placement of the electric fencing can encourage grazing below the tree while still protecting it.

Management

The silvopasture at True Grass Farms has been established by (1) grazing animals in existing oak savanna, and (2) planting trees and other perennials in grassland already being grazed. Species selection and management are largely influenced by wind and water limitations with the area receiving an average of 32 inches rainfall annually. High winds have been the biggest barrier challenging establishment of seedlings, in addition to gophers and fencing failures leading to damage by cattle. High winds over long periods cause direct damage (i.e. wind burns) and also affect the growth rate of trees.

In selecting oak species, Frosini has focused on drought resilience and acorn sweetness, considering palatability for both human and livestock consumption.

Following an initial “watering in” of 150 gallons per tree, trees are watered with drip irrigation for the first four years, with diminishing volumes of water over time. Planting areas are weeded regularly for the first three years and infrequently after this initial establishment phase. Frosini mulches with old sheep wool, both because it is abundant in the region and because affordable woodchips are hard to find in the area.

Approximately 75 animals graze at True Grass Farms at any given time. Frosini has experimented with a variety of species and breeds of livestock, especially as the market has changed rapidly since the onset of the Covid-19 pandemic. Livestock diversity allows Frosini to trial new species and grazing configurations as he figures out what is optimal for the land and his business. While grazing systems and stocking density vary greatly across properties, planting sites, and animal species, Frosini typically rotates animals every three to four days, with animals never spending more than one week in a given area.



Tree seedlings protected with cages made up of a cattle panel secured to four T-posts. Adjacent, linear electric fencing is used to create grazing paddocks.

Trees are protected with cages made up of a cattle panel secured to four T-posts, and linear electric fencing is used to create grazing paddocks. Frosini uses single line electric fencing for cattle and mesh electric fencing for sheep. Chickens are housed in and graze using mobile “tractor” structures, allowing for intense grazing that has been particularly helpful for seedlings when newly established and very vulnerable to damage from larger livestock. While using a single line of electric fencing for the cattle provides less protection than multiple lines, the risk is outweighed by the benefit of being able to easily create unconventional grazing corridors between plantings.

Thus far, Frosini is experimenting with two planting spacings: 200’ between rows and 30’ within rows (~45 trees/acre), and 100’ between rows and 20’ within rows (~50 trees/acre). With attrition, Frosini expects the gridded planting to evolve into more natural spacing, as he shifts his planting strategy to focus on companion planting around existing trees to form small “islands” of perennials.

Return on Investment

Managing both costs and expectations has been key to making the incorporation of silvopasture viable for True Grass Farms. To this end, Frosini is experimenting with small numbers of many tree species and varieties and is not relying on the sale of tree crops. Funding support from the California Department of Food and Agriculture’s Healthy Soils Initiative and local Resource Conservation Districts helps to make this possible. From Frosini’s perspective, the ultimate reward is restoration of the ecosystem, which will inevitably benefit True Grass Farms’ meat production operation.

Frosini has witnessed that the cattle fencing and T-posts alone have increased the number of birds visiting the land. The birds use the tree cages as waystations in an otherwise grazed landscape denuded of trees. In the process, bird droppings have provided additional fertilizer to the young trees, effectively kickstarting the fertility of the tree planting sites. Additionally, the increased presence of birds in the grasslands is helping to disperse seeds, which Frosini hopes will ultimately aid in building back the native seedbank.

Challenges of Silvopasture at True Grass Farms:

- Difficulty finding and retaining local labor due to high cost of living in the area.
- Increased labor demands of moving animals and tending to trees once established.
- Reliance on plastic for irrigation to establish trees.
- Gopher damage (even with tree cages).
- Wind and frost damage.
- Deep disappointment of losing trees after years of tending to seedlings.
- Finding sources for seedlings with local tree genetics.

To learn more about True Grass Farms, visit: <https://www.truegrassfarms.com/>

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