

Integrating Animals into Orchards



Sheep graze the almond orchard at Gonzales-Siemens Family Farm in Wasco, California.

SILVOPASTURE APPROACHES

- Incorporating sheep into a vineyard
- Planning and managing a new orchard with animal integration in mind
- Integrating animals into a mature orchard
- Integrating animals into a young orchard

CONSIDERATIONS

Livestock type: Sheep and poultry are the most common grazers in traditional orchards, since these animals are less likely to damage trees than other livestock species. Certain breeds of goats and short-nosed pigs are also good options, but these may require closer supervision and potentially more robust protection for the trees. Additional considerations include:

- The number of animals you can keep in a given area for a given amount of time depends on many factors and may change each year. Close monitoring and experimentation of your management system can help you learn the factors that need to be prioritized, as well as which species are most appropriate for your goals and resource limitations.

- Contract grazing, or even the informal borrowing of animals from neighbors, can be a useful tool for working with new types of livestock and a lower risk way to identify animals and infrastructure that you may consider investing in.
- Poultry are fairly easily incorporated into young orchards and can be contained with mobile enclosures for grazing in small places and with a smaller number of birds. This also reduces the need for electric fencing and provides additional protection from predators.

Forage: Orchards can provide various sources of nutrition for livestock, depending on the animal species, tree type(s), and maturity. Some sources of nutrition include:

- Weeds and existing grasses!
- Cover crop, which can be seeded between rows of trees.
- Dropped fruit and nuts, which can be especially useful post-harvest. (Prior to harvest, you must be mindful of any food safety restrictions.)
- Tree leaves and shoots. These can be browsed directly from young branches of trees, “chopped and dropped” in place, or even “chopped and carried” to another area to minimize the interaction of animals with trees.
- The quantity of forage that can be expected depends on a variety of factors, including the producer’s goals for and management of the silvopasture system.

Tree protection: Young trees need the most protection and will likely need to be fenced or robustly caged to protect from livestock. Moveable electric fencing can be a good option for fencing within an orchard. The cost of fencing (whether permanent or temporary) and the labor for installation of temporary electric fencing should be considered. Mature trees do not require as extensive protection, especially if animals are frequently rotated and have sufficient forage available.

Irrigation: Certain animals will chew on or dislodge sprinklers and drip irrigation, especially if left to graze a given area for longer periods of time.

Food Safety Regulations: When incorporating animals into orchards, be aware of the requirements of the Food Safety Modernization Act and Produce Safety Rule. For most operations, this means excluding animals from the orchard

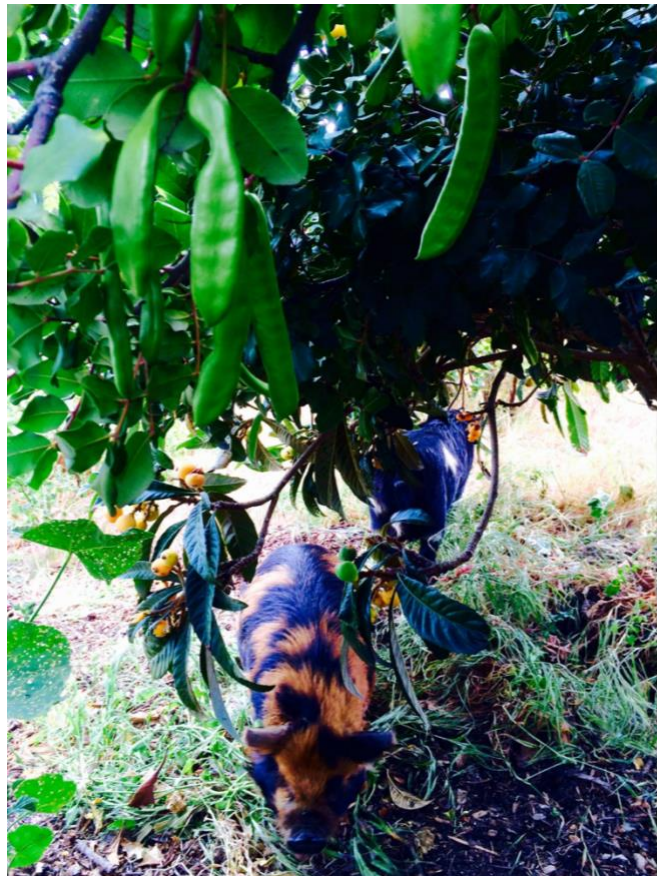


Photo: G. Tautrim, Gaviota Givings

Kuni Kuni pigs forage under loquat and carob trees at Gaviota Givings in Gaviota, California.

for the 90-120 days before harvest. Certifiers and packinghouses might have additional or different requirements that should be considered in advance of introducing livestock. Additionally, consider how and where you will keep animals during the food safety animal exclusion time period.

Contract grazing: Working with a contract grazier or shepherd can be a lower risk and lower labor investment way of incorporating livestock into your orchard. Alternatively, you can try it out for a few seasons to see if it is right for your orchard and/or business before you invest in a herd of your own. In either case, you will need to establish a relationship with a contract grazier. Another consideration is scheduling the grazing in accordance with the shepherd's availability and also in response to forage growth and any food safety constraints.

POTENTIAL BENEFITS

- Livestock can help clear the orchard floor of fallen fruit post-harvest, which can reduce the presence of some pests (i.e. navel orangeworm in almond trees). Clearing orchard floors of biomass greatly reduces the need to mow or spray herbicide.
- Trees provide shade and shelter for animals.
- Cover crops, weeds, tree fodder, and fallen fruit can provide supplemental and/or dry season nutrition.
- Integrating livestock and tree crops can provide more diverse revenue sources, including the potential for value-added products.
- Properly managed grazing has the potential to increase soil organic carbon, which in turn can improve soil fertility and water holding capacity. This can reduce the need for fertilizer application depending on the combination of plants and animals. For example, the integration of poultry can lower the need for nitrogen fertilization.
- This practice is synergistic with organic methods because organic producers avoid potential risks to animals from chemical pesticides, and, if managed correctly, animals can aid in weed abatement and fertility.

Relevant California silvopasture producer case studies:

Mazaroli, D.N., and Carlisle, L. California Silvopasture Producer Case Study: Gaviota Givings. Strategy Research Science. (2023).
<https://www.strategyresearchscience.com/gaviota-givings>

Mazaroli, D.N., and Carlisle, L. California Silvopasture Producer Case Study: Gonzalez-Siemens Family Farm. Strategy Research Science. (2023).
<https://www.strategyresearchscience.com/gonzales-siemens-family-farm>

Mazaroli, D.N., and Carlisle, L. California Silvopasture Producer Case Study: PT Ranch. Strategy Research Science. (2023). <https://www.strategyresearchscience.com/pt-ranch>

ADDITIONAL RESOURCES

Contract Grazing in Orchards and Vineyards [Webinar Recording]. UC Agriculture and Natural Resources. (2022). <https://youtu.be/sFxehVo9Zwo>

Food Safety Modernization Act (FSMA). FDA. <https://www.fda.gov/food/guidance-regulation-food-and-dietary-supplements/food-safety-modernization-act-fsma>

Food Safety Considerations for Integrating Livestock into Produce Cropping Systems. ATTRA. (2019). <https://attra.ncat.org/publication/food-safety-considerations-integrating-livestock/>

Food Safety in Agroforestry Systems. Savanna Institute. <https://www.savannainstitute.org/foodsafety/>
Available in English, Spanish & Hmong

Integration of Livestock in Orchard Systems. [Webinar Recording]. UC Agriculture and Natural Resources. (2022). <https://youtu.be/QYzVXY9fTPc>

Livestock and Crop Integration. Center For Regenerative Agriculture And Resilient Systems. CSU Chico. <https://www.csuchico.edu/regenerativeagriculture/ra101-section/integrating-livestock.shtml>

Match.Graze <https://matchgraze.com/> *A free online platform that connects livestock producers and landowners throughout the state of California.*

Pastured Pigs + Tree Crops: Dayna Burtneß and Eliza Greenman [Video]. Savanna Institute. <https://www.youtube.com/watch?v=KaSeT5nm-Dc>

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