

INFRASTRUCTURE FOR CROP-LIVESTOCK INTEGRATION

Adaptations to Infrastructure on Organic Farms

In OFRF's 2022 National Organic Research Agenda ([NORA](#)), organic farmers and ranchers across North America shared a common concern about the lack of technical assistance and educational resources available for Integrated Crop-Livestock Systems (ICLS). Integrating crops and livestock results in numerous benefits, however the process can also lead to increased complexity, especially for farmers who must adhere to National Organic Program rules and regulations.

At OFRF we know farmers' #1 source of information is other farmers.

This [series of resources](#) focused on Crop-Livestock Integration is informed by interviews with four highly-experienced organic producers that shared their challenges, successes, and advice for others interested in integrating livestock and crops on their organic farms.

FROG SONG ORGANICS



Hawthorne,
Florida

*Mixed vegetables,
flowers, herbs, pastured
pork, eggs*

LOCAL COLOR FARM & FIBER



Puyallup,
Washington

*Naturally-dyed yarns and
fibers, Finnsheep lambs,
vegetables*

SHADY SIDE FARM



Holland,
Michigan

*Heirloom dry beans, open
pollinated corn, small
grains, hay, beef and lamb*

HIDDEN HOLLOW FARM



Dayton,
Virginia

*Dairy, eggs, vegetables,
hay, corn, and beef*





LIVESTOCK HOUSING & WATER

To be successful integrating livestock and crop production, farmers need adequate infrastructure to keep and move livestock. When asked what specific adaptations to infrastructure they developed for crop-livestock integration, the farmers we spoke to shared experiences that fall within two categories: **housing & watering**, and **fencing**.

There may be as many types of animal housing as there are farms with livestock. Organic farmers with ICLSs are adapting livestock housing to many factors: the type of animal, lifecycle stage, number of animals, climate, season, and the soils where their animals are being kept. They are adapting housing and watering systems for mobility and designing infrastructure that can be moved efficiently with the equipment they have on hand.

Infrastructure with wheels

At Shady Side Farm, watering systems for livestock are moved around the farm on trailers. “We don’t have dedicated water lines around here,” Mike explained. “Our infrastructure is trailered water. With trailering water we don’t end up with mud holes or livestock areas where they’re wearing out the pasture. Because we’ll come back to a pasture two or three times in a summer with a group of animals, we want to move those water areas so we don’t have worn out areas in the fields. So water tanks on trailers help us get the water to where the animals are, keeping it fresh on a daily basis.”



A movable water trailer at Shady Side Farm.

Infrastructure without wheels

At Frog Song Organics, where the soils include heavy clay, farmer John Bitter has moved away from any animal housing on wheels such as chicken houses on trailers, because clay gets into tire seals, ruins them, and the seals need to be replaced often. New housing structures are custom-built using 2-inch metal tubing, in a design that can be picked up with a front-end loader and easily moved with a tractor.



Mobile pig housing at Frog Song Organics is built so that it can be moved by a front-end loader. Note that each end of the roof can be flipped back, shortening the width of the structure during transport.

Winter housing

Developing areas for livestock to spend a winter includes infrastructure specific to animals and to the climate. In the wet winter climate at Local Color Farm and Fiber, they cannot graze from late fall until around April. Their farm is also close to a major river and prone to flooding. So their 'heavy-use', winter area was moved to high ground.



Sheep overwinter on higher ground at Local Color Farm and Fiber.



A caterpillar tunnel provides winter housing at Local Color Farm and Fiber.



FENCING

Farms with livestock rely on good fencing systems to operate successfully. Farmers who are introducing livestock to a farming operation will consider many factors when designing fencing systems, including the type of animal being kept; the grazing systems and crop rotations that will be utilized; the labor necessary for upkeep and maintenance; and whether or not usable fencing already exists on the farm. For the organic farmers we spoke to, fencing infrastructure adaptations are being made in two key areas: **perimeter fencing** and **portable line and net fencing**.

Perimeter fencing

According to farmer Arlen Beery, producing organic milk at Hidden Hollow Farm, the perimeter fence is key. Having a perimeter fence allows farmers to set up paddocks and graze animals where and when it makes the most sense. For example, if production is low on hay ground because of low rainfall or hot weather, Arlen lets the cows in to graze. “It’s a lot cheaper to let the cows in than to run hay equipment over that ground. Let the cows clip it. That’s something I would recommend to anyone pursuing these ways of farming, to have a strong secure perimeter fence so you can flash graze when needed.”


“The way I farm today, the most important thing is having a perimeter fence around the whole farm that is secure.”

**~ Arlen Beery
Hidden Hollow Farm**

Not every farmer will be designing a strong perimeter fence from scratch, and adaptations may need to be made to fencing that already exists. When Shady Side Farm started out, farmer Mike Bronkema said they had too many fences around the farm. “It made it too small. We couldn’t get the equipment in to do the tillage that we needed to,” he said. They have adapted to include a perimeter line fence with five lines.

Pro Tip from Shady Side Farm

“The top line is at about forty inch height, and each line is about six inches below the one above it. The bottom line is sixteen inches from the ground,” Mike said. “So we can weed whip under there really nice. Sixteen inches up off the ground is enough to keep cattle in.”



A single-strand fence, electrified by connecting to a perimeter fence, is used to create paddocks at Shady Side Farm.

Portable fencing

A perimeter fence with a bottom line high off the ground may be enough to keep cows in, but it is not enough to keep young sheep in. At Shady Side Farm, portable net fencing is hooked to the perimeter line fence and electrified so sheep paddocks can be made. This portable net fencing helps create paddocks for grazing sheep or cattle within the perimeter fence.



Portable net fencing at Shady Side farm is electrified by connecting to the perimeter fence.

“We’ve got divider fences that can be hooked up with spring gates or string gates, that we can actually transfer power from the perimeter fence into an interior 20 acre divide. We’ll live those up so that we can use either rope fence for keeping cattle in, the electrified string fence, or the electro-net fence that we use to rotate our lambs through. Those things are set up and moved on a daily basis throughout the summer.”

**~ Mike Bronkema
Shady Side Farm**

Maintaining electric fencing becomes an essential part of farm life for any ICLS that utilizes it. At Frog Song Organics, testing and maintaining portable electric fencing is a task that is done twice a day by staff fully trained in how the entire system works. Training staff to understand how electricity flows and how to troubleshoot in the field has become a part of employee training, and the added focus has helped the farm’s overall efficiency.



Testing electric fencing is done twice daily at Frog Song Organics by staff trained to monitor and troubleshoot the system.





At Shady Side Farm, adaptations to fencing systems have included utilizing portable net fencing outside the perimeter fence. “If I have the chance and my perimeter fence is nice and clean,” Mike explains, “then I love to jump the fence and put lines of portable fencing outside the fence.” He then grazes sheep in thin paddocks along and just outside the perimeter fences, which lowers the machinery maintenance needed to keep perimeter fences clean. “I don’t have to weed whip the fence. The sheep will graze under the fence and keep it clean for me.”

Portable net fencing is placed outside perimeter line fencing at Shady Side Farm. Sheep graze under the line fence and keep it clean so no weed trimming is needed.

Key Takeaways

Infrastructure for the integration of livestock and crops on organic farms is key for any farm producing crops and livestock together. Organic farmers with ICLSs report making crucial adaptations to infrastructure almost continuously. The adaptations are products of observation, and while they may be unique to a farm system, their experiences may help other farmers interested in crop-livestock integration plan for success at their own operations.

This resource is one of several ICLS resources OFRF has created for farmers. The series includes farmer stories, [a video presentation](#), and factsheets on key topics, that include: The [Benefits of Crop-Livestock Integration](#), [Food Safety and Crop-Livestock Integration](#), and [Crop Rotations and Crop-Livestock Integration](#).

