

THE BENEFITS OF CROP-LIVESTOCK INTEGRATION

Considerations for Organic Farmers

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 that 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

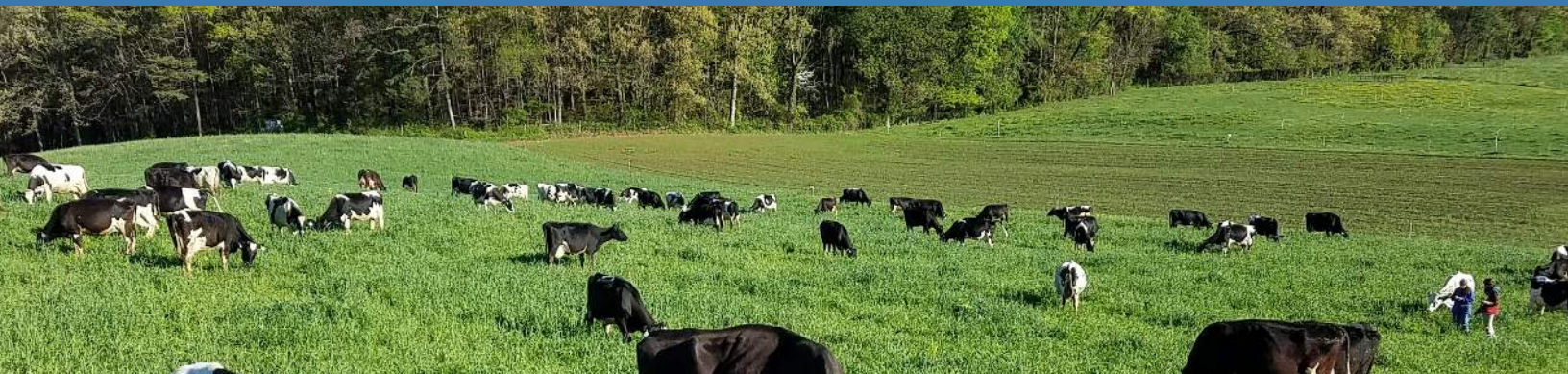
*Heirloom dry beans, open
pollinated corn, small
grains, hay, beef and lamb*

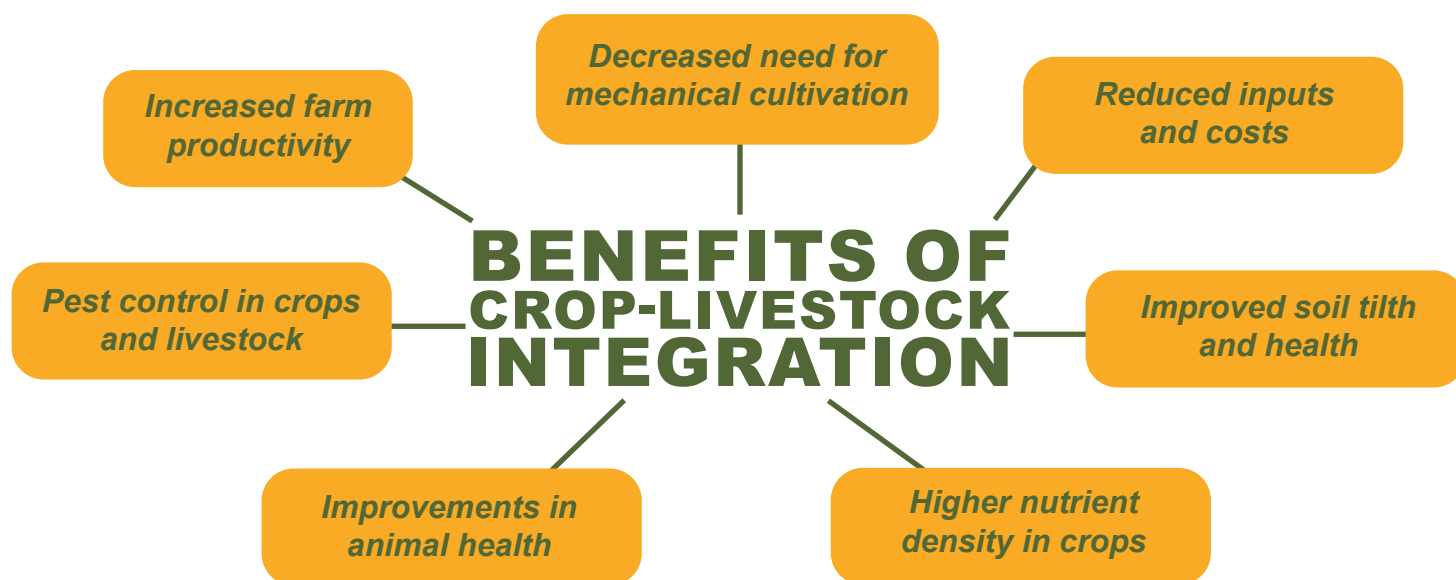
HIDDEN HOLLOW FARM



Dayton,
Virginia

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





INCREASED FARM PRODUCTIVITY

All four farms we spoke to attribute increases in farm productivity to the integration of crops and livestock. While some increases in productivity may take years to emerge, the capacity of farming systems to use and improve land not suitable for cash crop production is immediate, as is the ability of livestock to utilize crop residues (post-harvest).



Local Color Farm and Fiber grazes livestock on parts of the farm that aren't well suited for row crops.



Lands with lower fertility are grazed more intensively than others, until fertility returns. Frog Song Organics.



REDUCED INPUTS AND COST

A major benefit of integrating crop and livestock on organic farms is lower costs because of the decreased reliance on external inputs. For instance, on-farm composting at Local Color Farm and Fiber greatly reduces the amount of inputs and costs associated with crop farming. In addition to reducing fertility inputs, composts increase soil organic matter, which improves soil water holding capacity and reduces their irrigation needs.

At Frog Song Organics, the reductions in inputs that come with integration is important for the farm's values of using no fossil-fuel based fertilizers and producing food with as little fossil fuel as possible.

“It’s hard to buy the quality of compost that we make in this area.”

~ Emily Tzeng
Local Color Farm and Fiber

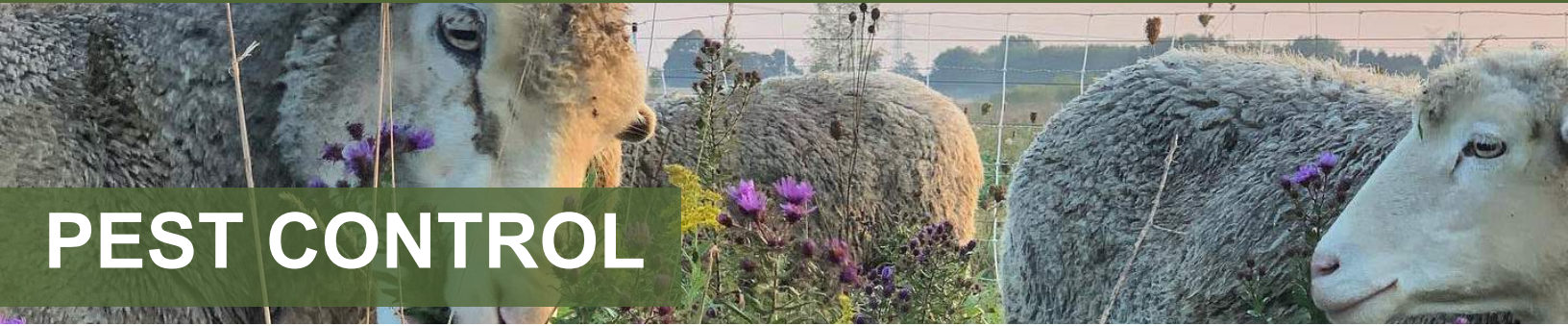


IMPROVED SOIL TILTH AND HEALTH

Many crop-livestock farmers see improvements in soil fertility, and some utilize ICLS to help balance soil health. Emily reports a doubling of soil organic matter where livestock have been incorporated into the system at Local Color Fiber and Farm. Where high concentrations of chickens were kept at Shady Side Farm, excess phosphorus is managed by raising hay for sheep and cattle, effectively lowering phosphorus levels for vegetable production. Additionally, at Frog Song Organics, farmer John Bitter reports that animal grazing has helped resolve fields with incongruencies in fertility and drainage, and led to uniform stands of crops where patchy production once occurred.

“Including livestock on cropping ground will increase soil organic matter faster than any other model of farming that I know of. Probably even faster than green manure cover crop. Cows leave patties on the fields, and dung beetles burrow into the ground, distributing that manure and transporting nutrients down into the soil. Earthworm activity in pasture settings increases soil biology. Infiltration improves. In this pasture setting where top 6” is not turned over for years, soil health really hums.”

- Arlen Beery, Hidden Hollow Farm



PEST CONTROL

Livestock help control crop pests on all farms in this series. At Frog Song Organics, where sweet potato weevil poses a serious threat, pigs graze fields following harvest and effectively remove the host sites of the pest by consuming the leftover potatoes. “With animal integration, the primary reason we do it is to turn a liability into a resource,” John said. And chickens effectively control pests that damage tree fruit, including plum curculio, millipedes, cutworms, and other lepidoptera pests.



A pig grazes sweet potato at Frog Song Organic

“To make the most of the benefits of the chickens’ manure, feed is concentrated around the base of fruit trees to maximize the time they spend scratching weeds and leaving behind manure.”

*~ John Bitter
Frog Song Organics*

Farmers with ICLs can also break pest cycles in livestock. At Hidden Hollow Farm, grazing chickens follow ruminant grazing to effectively lower the parasite loads in pastures. “Chickens are effective in helping control the parasite load that does follow cattle, or fly larvae,” Arlen said. “So taking chickens on pasture behind cows is beneficial. They clean up those larvae, parasites and flies.”



Chickens grazing at Hidden Hollow Farm.



INCREASED NUTRIENT DENSITY

Mike Bronkema, of Shady Side Farm, reports grain crops with double the protein content of the average conventional grain, something he attributes to integrated farming practices. Other farmers we spoke to contend that the nutrient densities of crops grown on soils with livestock integrated are much higher than industry standards. Products from livestock in ICLS may also have higher nutrient densities. At Hidden Hollow Farm, grazing chickens are “getting the clover and alfalfa in the fields, as well as crickets and worms, its beneficial to them,” said Arlen. “They get chlorophyll, and it produces a healthier egg for the consumer.”



IMPROVEMENTS IN LIVESTOCK HEALTH

Livestock on farms with ICLS can benefit from the diversified diets, amount of fresh grazing, and elevated plant nutrient densities that occur within properly integrated farming systems.

According to Arlen Beery at Hidden Hollow Farm, increasing the amount of food that animals get from grazing has many interrelated benefits including longer life spans.

Since beginning on-farm breeding of piglets at Frog Song Organics, John Bitter reports that animals are quick to begin foraging (within 7-14 days after birth), require less grain as percentage of feed, and are generally in better health.

“[The] health of cattle and chickens is a lot improved. Especially for the dairy cows, they are not pushed as hard as far as feeding. We don’t feed grain, so they’re not trying to produce more milk than they were naturally designed to. That’s the key factor. Cows have longer lifespans and better health, because they’re not being pushed by a high energy diet of grains that ruminant animals weren’t developed or created to eat.”

~ Arlen Beery
Hidden Hollow Farm



DECREASED NEED FOR MECHANICAL CULTIVATION

All the farmers we interviewed spoke about utilizing the effects of livestock grazing to lessen the need for mechanical field preparation. Several reported that cover crops are easier to incorporate into the soil following grazing. And in the ICLS at Frog Song, where pigs graze sweet potato fields post harvest, no further field preparation is needed before a planter is used for seeding the next crop in the rotation (either a cover crop, forage crop, or a vegetable crop, depending on the season).

For farmers using livestock grazing to lessen mechanical field preparation, timing within seasons and crop rotations is key. At Hidden Hollow Farm, when a field is ready to come out of 7 years of diverse pasture to annual production, cattle are “outwintered” in higher densities on those fields, helping to prepare the areas for spring plantings of annual grasses/grains.

Key Takeaways

These benefits of crop-livestock integration are interrelated. Over time, where farmers are integrating crops and livestock within the same systems, benefits from a more holistic system can be realized in crops, animals, soil, and consumer health.

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: [Food Safety and Crop-Livestock Integration](#), [Infrastructure for Crop-Livestock Integration](#), and [Crop Rotations and Crop-Livestock Integration](#).

