



# POULTRY LITTER COMPOSTING FOR BACKYARD FLOCKS

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**EXTENSION**

Your coop is ready. You've built a covered run or exercise yard to keep your chickens safe from predators and wild birds that carry diseases. Your chicks are old enough to move outside, and you're eagerly awaiting your first fresh eggs.

In the meantime, your chickens are producing something else on a daily basis: manure. How do you handle all of that poultry poop so that your neighbors don't complain about the smell and the flies?

One good answer is composting. Properly composted poultry litter—manure mixed with bedding material, such as pine shavings—is a valuable soil amendment. However, just as it takes care and management to get your chickens into laying condition, it takes care and management to compost the litter from poultry housing environments.

Compared to other manures, poultry manure is high in nitrogen and phosphorous, and these nutrients are quickly available to plants. Excess nitrogen can easily interfere with seed germination and “burn” plant roots and young plants, but composting helps to stabilize the manure nitrogen so that it's beneficial to garden plants.

## How Composting Works

Composting is an aerobic process that's accomplished by billions of beneficial soil organisms. Some of them, like earthworms and millipedes, are big enough to see. There are many more, however, that can only be seen with a microscope.

When the compost pile contains the right quantity and balance of materials, soil organisms digest manure and other compostable organic materials in an odorless process. Proper composting also reduces pathogens or disease organisms that may be in manure.

## Equipment for Composting Poultry Litter

Using a series of three bins has proven to be a successful composting design. Important considerations for timely composting include the size and location of compost bins. Compost requires a certain volume of materials to create the heat needed for active processing, so it is important to size the bins large enough to contain several days of material.

The composting process typically takes several weeks, during which time your flock will continue producing feedstock for the pile, so you'll need more than one bin. To facilitate ease of handling and working with materials, bins should be 4-5 feet long, 4-5 feet wide, and 4-5 feet high. Comparable round bins should be 4-5 feet in diameter and 4-5 feet high.

Construct or place bins in a shady to semi-shady area. Shade helps compost retain the moisture necessary to keep microbes alive. Check local ordinances for any potential setback requirements from property lines before placing your bins.



**Figure 1.** A series of three compost bins works well to process poultry litter while controlling odor and pests (Photo by H.N. Kolich).

In Georgia, stored manure must be covered at all times, so be sure to have a cover or roof over your compost bins. A cover is also necessary to maintain uniform moisture throughout the pile and minimize leaching. Build a solid roof or place a plastic tarp over the compost pile to keep out storm water that would soak the pile and drown the process.

You will also need a pitchfork or similar tool for “stirring” the materials in the pile and for turning the pile into the next bin.

A compost thermometer is handy, too. Monitoring your pile temperatures gives you a good idea of how well the compost process is developing. Temperatures that exceed 130 degrees Fahrenheit indicate that the composting organisms are working properly to break down the organic matter within the pile.

## Poultry Litter Compost Recipe

A 3-to-1 ratio of “brown to green” material is ideal for a proper compost ingredient combination. Components of a successful compost pile include:

- **70-75% carbon:**  
Carbon should be supplied by the pine shavings or bark used as poultry bedding, plus other coarse “brown” material, such as dead leaves, straw, or yard and garden waste. Sweetgum balls, pinecones, and other coarse material can be used, but will take longer to break down.
- **25-30% nitrogen:**  
Nitrogen should be supplied by manure and “green” material such as grass clippings or fruit and vegetable scraps.
- **Moisture:**  
Moisten compost materials in layers as you build the pile. Compost materials should be uniformly moist throughout the pile—about half of the total weight—but the pile should not be dripping wet.
- **Oxygen:**  
Including coarse materials in the pile allows air to move into and through the pile. Periodically turning the pile fluffs materials and introduces oxygen.
- **Microorganisms:**  
Microorganisms should be supplied by the soil and already present in materials added to the pile for composting.
- **Heat:**  
Microorganisms create heat as they digest organic materials in the pile.

## Directions:

1. Rake litter from poultry housing areas on a weekly basis if you have six or more chickens. If you have five or fewer chickens, you can probably get by with cleaning out litter every two weeks or so. More frequent cleaning minimizes insect, odor, and pest problems.
2. Add poultry litter to the first bin. Because poultry manure by itself is wetter and higher in nitrogen than poultry litter, you may need to mix in materials such as leaves, straw, wood shavings or wood chips to balance nitrogen with carbon, add bulk for air circulation, and absorb excess moisture.
3. Cover compost ingredients with a solid roof or secured tarp.

4. Over the next few weeks, continue adding litter and other compostable brown and green materials until the bin is full. Mix ingredients well and spray with water as necessary to achieve even moistness throughout the pile. Keep the pile covered between additions.
5. When the first bin is full, cover it and allow it to compost undisturbed for two weeks. Monitor temperature with a compost thermometer. Aim for an internal temperature between 130 and 150 degrees Fahrenheit. See troubleshooting tips if the pile doesn't heat up enough.
6. After the pile has composted for two weeks, turn it into the second bin. Cover and let it compost for several more weeks.
7. Repeat steps two through five, piling fresh litter into the (now empty) first bin.
8. When the pile in the second bin has composted for several weeks, turn it from the second bin into third bin to allow it to mature for several more weeks.
9. Turn the material from first bin into the second bin for a second heating cycle.
10. Repeat steps two through nine.

## Uses for Compost

Fully composted poultry litter is valuable for improving soil structure. It also adds a bit of fertility to the soil. Compost can be tested for nutrient content to properly add fertility to soils. Here are some suggested uses for compost:

- Apply a quarter-inch of compost to lawns as topdressing.
- Mix compost into the soil of flowerbeds before planting.
- Blend compost with peat moss and perlite to create potting soil for outdoor container plants.
- Mulch garden plants, such as tomatoes and peppers.
- Share compost with your neighbors.

## Compost Troubleshooting Tips

Problem	Possible cause(s)	Suggested remedy
Compost pile smells bad.	Pile is too wet. Excess moisture drives oxygen out of the pile. Under these conditions, aerobic microbes die and anaerobic (stinky) microbes colonize the pile.  Excessive nitrogen source or too little carbon	Turn the pile to help it dry out. Add dry leaves or pine shavings to help absorb excess moisture.  Add leaves, mulch or other carbon material to increase the carbon to nitrogen ratio.
Pile does not heat up.	Pile is too dry.  Pile is too small.  Pile needs more nitrogen.	Turn pile and moisten layers.  Continue adding and mixing materials.  Add more "green" matter or chicken manure.

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