

4-H CHICK CHAIN PRODUCTION & BIOSECURITY TIPS

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Backyard poultry keeping, popular before the pandemic, has exploded across Tennessee since the start of the pandemic. This explosion is fueled, in part, by the ever-increasing number of families moving to Tennessee with intentions of living a “homestead-type” lifestyle. Modern **homesteading is a lifestyle of increased self-sufficiency** and is characterized by a greater reliance on subsistence agriculture. These individuals have chosen to be more involved with where their food comes from and how that food is produced, often producing it themselves on their own property. Many choose to plant gardens (often with heirloom produce) and to raise livestock (especially chickens) on their property. Homesteading, as it is practiced today, is not so much defined by where someone lives, either the city or the country, but more so by the lifestyle choices these individuals choose to make. County Extension agents are seeing this in the increasing numbers of participants in local 4-H Chick Chain programs. Often, these 4-H youth have no prior experience with poultry production and many times, their parents or grandparents have no prior livestock experience. As a result, the entire family is learning poultry care and production together, making the role of the county agent more valuable than ever. For someone with no practical poultry experience, guidance, information, and insight from a knowledgeable county agent can mean the difference between success and failure of a 4-H Chick Chain project.

4-H Chick Chain

For generations across Tennessee and other states, the 4-H Chick Chain Project has been helping youth develop animal husbandry talents, financial knowhow, responsibility, time management, and other life skills they will need in the future. The 4-H Chick Chain Project is a popular program managed by the Cooperative Extension Service in many states that teaches young people **recommended management practices for properly caring for and raising chickens**. Participation in the project teaches young people critical management skills such as:

- Learning to produce healthy chickens.
- Recognizing disease and other issues that affect the health and even life of the flock.
- Developing poultry management skills.
- Contributing to the food supply of the family through meat and egg production.
- Developing record-keeping skills related to income/expenses associated with the flock.
- Developing business skills associated with the flock (how much time, effort, supplies, money, feed, etc. is required to maintain the flock).
- Realizing the sense of pride, satisfaction and accomplishment associated with successful flock care and management.

Participants in each county receive their pullets (female chicks) all at the same time during the spring. All chicks will come from the same reputable hatchery chosen beforehand and be properly vaccinated. The chicks will be shipped through the mail and will be three days old or less upon delivery. Depending on how individual counties structure their programs, there may be more than one breed available to choose from; all participants will choose their birds from the available options in their county. Participants will then feed and care for their birds throughout the spring and summer for approximately 20 weeks. At that time, participants will bring a specified number (often three to six) of their best pullets to their county's 4-H Chick Chain Show and Auction. The remainder of the Chick Chain birds are the participant's to keep.

Before chick arrival

Before your chicks arrive, you and a parent(s) will attend a **mandatory training session** where your county Extension agent will provide valuable information that will assist you in preparation for and the care and raising of your new flock. Along with information on the proper care and management of your flock, will be critical information on biosecurity and all the procedures and practices you should follow to keep your flock safe from disease, especially avian influenza, a serious respiratory infection currently a threat to chickens across the U.S., and salmonella, a common bacteria associated with poultry that does not affect the chickens but can sicken people. You also will be provided with the date and location of when and where your chicks will arrive.

You should have a **site to brood your new flock selected and all the supplies in place** two to three days before your chicks arrive. Supplies you will need for your baby chicks include at least one feeder, waterer, and heat lamp for warmth, like what is seen in Figure 1. You will also need a high protein chick starter or game bird feed to start your new chicks. This is available at your local feed store or co-op. Other critical supplies include:

- Shelter
 - Can be a large box or tub (with bedding material) for the first few days.
 - As birds grow, a pen in the corner of a barn, storage shed or garage with bedding material on the floor can serve as shelter.
 - Adequate shelter will protect chickens from weather and predators. Avoid placing shelter near the edge of wooded areas to reduce the predator threat.
 - Proper shelter should allow for adequate ventilation.
- Thermometer (maintaining proper temperature is critical for baby chick care and survival)
- Bedding material (pine shavings, rice hulls, etc.)
- Light (adequate light to help chicks find feed and water)
- Fresh air (adequate ventilation but no drafts that could chill chicks)
- Safe, clean, fresh water
- High protein starter/game bird feed
- Plenty of TLC (tender loving care)



Figure 1. Supplies needed to begin a chick chain project: chick feeder, waterer, heat lamp for brooding, and high protein feed. Source: All images from Tractor Supply.

Before the chicks arrive, make sure everything is ready. Preheat the brooding space for at least 12 hours prior to arrival (and preferably 24 hours) to make sure the bedding material is warm and to verify that everything is working properly. When the chicks are delivered and in your care, you will be responsible for raising them from chicks to adult birds over the next 20 to 23 weeks. How well your birds do at your county's 4-H Chick Chain Show and Auction

depends on your management skills and how well you cared for them during the 20-plus weeks leading up to the show and auction. They will require your constant attention and must be fed, watered, and cared for each day, including weekends and holidays. Watch the chicks closely the first day or so and make sure they all quickly find feed and water and know where the heat source is. Make sure that the heat source is securely fastened so it does not fall into the bedding and start a fire. Every year, dozens of homes, garages, and barns burn down from improperly secured heat sources when brooding. Keep the heat source far enough away from flammable materials like cardboard and bedding so it does not start a fire. Feel the crop (Figure 2) after they have been placed for a few hours to make sure it has feed in it. This will let you know they have found feed and know how to eat. Your chicks **must be able to find the heat source**. If they wander away from the heat lamp and can't find their way back, they will become chilled and stop searching for feed and water. Chilled chicks tend to huddle together to stay warm and do not eat or drink properly. Baby chicks cannot maintain their own body temperature very well the first few days of life without an adequate heat source. They can easily become chilled and possibly even die from hypothermia if they are away from the heat source for too long. Watch them closely for signs of huddling or loud chirping that can be an indication of cold chicks. Baby chicks do not like a draft. Watch for signs of noisy chicks huddled together opposite from the direction the draft is coming from. Chicks that are too warm often appear drowsy and will be spread around the perimeter of the brooding area, seeking a cooler location. Chicks that are just right, temperature-wise, are contentedly cheeping and evenly spread throughout the brood area.



Figure 2. Chick on the left has a full crop. Chick on the right has not yet found feed. Source: The Poultry Site

Feed

Approximately 70 percent of the cost of raising chickens is related to feed cost. Always make sure you are feeding **the correct feed (and enough of it)** to your birds. Chicks should be eating a high protein (21 to 26 percent or higher) starter or game bird feed for best performance until egg laying starts. Once egg laying starts, birds can be switched to a 16 percent layer ration with extra calcium to help keep the eggshells hard. Even though feed will be your largest expense, do not shortchange your birds on feed. The health and welfare of your birds will suffer if you do. You should **view feed as an investment rather than an expense** because the better your feeding program, the more the hens will reward you with eggs. There are two common mistakes made with feeding chickens. **The most common mistake is feeding the wrong kind of feed; the second is not feeding enough of the right kind of feed.** Feeding mistakes can affect the performance, health, welfare, and even life of your chickens. Chickens are living creatures and will be dependent on you for their welfare

and survival. You must be committed to providing for their needs, especially when it comes to feed and feeding requirements.

It is critical that you **DO NOT** raise your birds on scratch grain (cracked corn and other grain), layer mash, or table scraps, even though these may be less expensive than starter or game bird feed. These **will not save money in the long run and your birds will not grow properly** if fed anything less than a good high-protein starter or game bird ration. Feeding scratch grain or even mixing scratch grain with the commercial starter/game bird ration dilutes the protein content the flock is consuming and reduces the vitamin and mineral content. This makes the chickens less resistant to disease and increases the likelihood that they will pick at each other's feathers, possibly leading to cannibalism within the flock. In addition, hens fed scratch grains do not lay as many eggs because they are not receiving a complete, balanced ration necessary for peak egg production. Use a feeder(s) to prevent feed wastage. Do not throw feed on the ground. Make sure there is enough feeder space for all the birds to easily eat at once. Otherwise, the more dominant birds may prevent the more timid birds from getting what they need. Chickens quickly establish a pecking order from a young age, and the bossy birds will "rule the roost" if given the opportunity.

Medicated starter feed is available and should be considered for younger birds. The *Eimeria* protozoan parasites that cause coccidiosis are very common, especially for chickens raised on the ground. Seven different *Eimeria* species may infect chickens, but only three cause most of the problems in the U.S.: *E. tenella*, *E. maxima*, and *E. acervulina*. Each affects a different area of the intestine where they cause damage by burrowing into the intestinal wall. Chickens affected by coccidiosis often have blood in the droppings that results from intestinal damage caused by the parasites burrowing into the intestinal wall. Most chickens come in contact with these parasites during their first few weeks of life. Medicated feed containing a coccidiostat (often amprolium) provides some protection against coccidiosis. Although non-medicated feed is available, it puts the birds at greater risk of severe infection and possible death from coccidiosis.

If you are unsure what type of feed you should be feeding your chicks or older birds, seek advice from your local co-op or feed store. The individuals that work there are well-trained in various livestock feeds and can assist you in choosing the correct feed for your birds. The right feed and enough of it is critical to the health and welfare of your flock. You cannot afford to shortchange your flock on the quality or quantity of the feed they consume.

Bedding material

Bedding material will be needed on the floor of your brooder/coop for absorbing moisture from the manure and for cushioning the breast and legs of your birds. Start your baby chicks with three to four inches of bedding material on the floor. Two to three inches usually works well from spring to fall in most situations. You may want to use deeper bedding material in

the winter. Kiln dried pine shavings is likely the ideal bedding material, in large part, due to its absorbency. It is good at absorbing moisture from the manure and keeping the litter loose, dry, and friable. Hardwood shavings may be an option in some areas. However, hardwood shavings can grow mold when wet which may be a possible risk of respiratory issues in chickens. Kiln dried sawdust is a possible alternative bedding material for older birds. Sawdust should be avoided with baby chicks because the chicks may confuse sawdust with feed granules and eat sawdust instead of feed.

Straw is another possible alternative bedding material if the chop length is short enough. Straw should be chopped to ½ inch or shorter in length to be an effective alternative. Sand has been used at times for bedding material. However, sand is very heavy, very cold, and difficult to heat for baby chicks. It is very important to have a warm floor to start baby chicks. Chicks tend to lose body heat through their feet and become chilled quite rapidly if brooded on a cold floor. Other acceptable alternative bedding materials include rice hulls, peanut hulls, and chopped corn cobs.

Biosecurity

Biosecurity is an important part of keeping your flock safe from disease. “Bio” means life, and “security” means protection. Therefore, biosecurity is the “life protection” of whatever creature we are concerned with; in this case, that creature is chickens. Biosecurity is any and all of the practices, procedures and protocols you follow for the prevention and spread of disease. Biosecurity is important to prevent the spread of disease, maintain the health of your flock, and, if you plan to sell eggs from your flock, to increase your income stream. Sick birds lay fewer eggs; dead birds lay no eggs at all. It is vital to take the necessary precautions to prevent disease from reaching your flock. Biosecurity is made up of three distinct components, none more important than the others. All are necessary for biosecurity to be effective. These components are:

- **Isolation**
 - Confine your birds within a controlled environment.
 - Keep your birds away from other birds, especially waterfowl (which may carry avian influenza but not show symptoms) and wild birds.
 - Lock the coop or pen to prevent access by other people.
 - Separate birds by age.
 - If young and old birds are mixed, young birds will not likely make old birds sick, but old birds could very likely make young birds sick.
 - Do not mix species.
 - It is best not to mix chickens and other species, especially waterfowl. This happens all the time, but it greatly increases the disease risk.
- **Traffic control**
 - Control traffic on and around your farm, both foot and vehicle traffic.

- Outside of you and your family, very few individuals have any business being around your birds. Increased traffic is an increased disease threat.
- **Sanitation**
 - Use a footbath (Figure 3) at the entrance to your coop/pen.
 - Dry chlorine bleach is a common footbath disinfectant. It can be found on the internet or at most poultry supply houses.
 - Disinfect material, equipment and people that have access to your chickens.



Figure 3. Footbath containing dry chlorine bleach.

There are two main pathways to disease transmission:

1. **Direct transmission** – physical contact between infected birds and healthy birds.
2. **Indirect transmission** – disease is carried to susceptible birds by:
 1. Humans (likely the most common transmission route)
 2. Feed
 3. Water
 4. Environment
 5. Shared equipment
 6. Rodents and other vermin
 7. Pets

Biosecurity practices can help protect your chickens, but they can also help protect you. Take Salmonella as an example. Mail order hatcheries that participate in the National Poultry Improvement Plan (NPIP) do all they can to ensure the chicks they send out are disease free. However, **salmonella is very common in poultry**, and it is impossible to 100 percent guarantee chicks are salmonella free, even when breeder flocks are salmonella tested. Therefore, it is critical that flock owners take precautions and do all they can to protect themselves from salmonella infections. Chickens can be a wonderful thing to have; however, chickens are farm animals and belong outside with the cows and the hogs, not in the house with the cats and the dogs. If chickens are brought inside, the salmonella they may be carrying can continue to live on couches, carpets, and countertops after the chickens are back in their coop. While salmonella usually does not make the chickens sick, **salmonella outbreaks affecting people occur annually** in the U.S. Some outbreaks are worse than others, but they all occur when there is a breakdown in hygienic and sanitation practices. Often, those new to backyard poultry keeping and unfamiliar with chickens are unaware of simple steps necessary to prevent salmonella exposure. For more information on backyard chickens and salmonella, see UT Extension publication D 181 Backyard Chickens and Salmonella.

Chickens are living creatures, and it is not uncommon to lose one from time to time. Nature tends to work that way, even in the best of conditions. However, if you suspect something other than normal mortality, seek assistance immediately. Sometimes, despite all the best efforts to prevent it, flocks do get sick. Multiple birds coughing and sneezing at the same time or multiple deaths in a very short period is a sure indication that something is wrong, health wise, with your flock. Help is available by contacting any of the following:

- Your local county Extension agent
- Your local veterinarian
- Tennessee State University Extension Poultry Specialist (615-963-5823)
- University of Tennessee Extension Poultry Specialist (931-486-2129)
- C.E. Kord Animal Health Diagnostic Laboratory (615-837-5125)
- Tennessee State Veterinarian's office (615-837-5120)

In addition to your 4-H record book, **consider keeping a journal or logbook** where you document all your biosecurity practices and make note of any unusual flock behavior or death losses.

Summary

The 4-H Chick Chain is an excellent project for teaching youth responsibility and the care and management required to maintain a livestock project. County Extension agents play a vital role in assisting Chick Chain participants. Many participants often have no prior livestock experience and rely on county agents for a successful project. The importance of preparation before the chicks arrive, proper care and management after arrival, feeding enough of the right kind of feed, and biosecurity and disease prevention cannot be overemphasized. Neither can the overall goal of the project...to teach life skills that will be critical down the road and assist 4-H'ers at being successful doing something they have a passion for and enjoy.



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