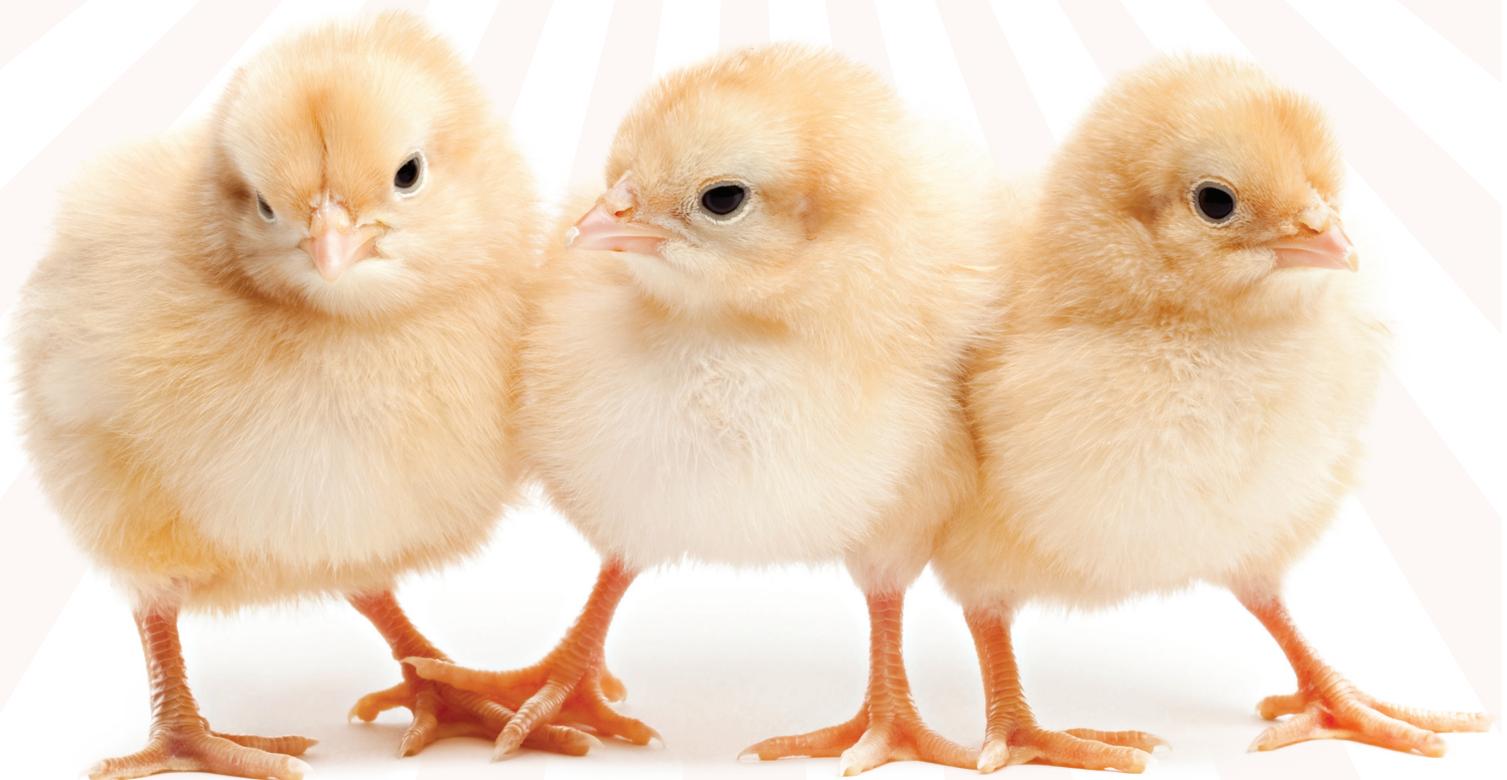




Production Manual



Alabama 4-H
Alabama Cooperative Extension System

www.alabama4H.com

What Is Chick Chain?

The 4-H Chick Chain Project teaches young people recommended management practices for growing and raising chickens. Participation will help you do the following:

- develop poultry management skills
- learn to produce healthy chickens
- develop awareness of business management
- develop record-keeping skills (income and expenses)
- contribute to your home food supply
- realize the pride of accomplishment



A 4-H member proudly holding her bird.



A 4-H member holding his pullet before the show.

Who Can Participate?

Any young person age 9 through 18 as of January 1 of the project year can participate. You do not have to be a current 4-H member; however, you will need to complete a 4-H enrollment form if you are not a member.

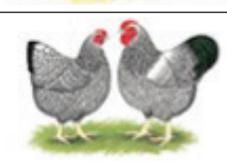
How Chick Chain Works

As a participant in the Chick Chain Project, you will receive either 10 or 18 chicks in the spring. The chicks will be pullets (females) that are 1 or 2 days old. All chicks will come from a reputable hatchery and be properly vaccinated. There will be different breeds available; you will choose your chicks from two or three breeds. You will receive 5 or 6 chicks of each breed you have chosen. You will feed and care for these pullets for approximately 20 weeks.

At the end of this time, you will bring 2 (if you received 10) or 3 (if you received 18) of your pullets to your county's 4-H Chick Chain Show and Auction. Proceeds from the auction will go to the 4-H Chick Chain Project.

Participation in Chick Chain

Before receiving your chicks, you and a parent will attend a mandatory training session. At this meeting you will receive valuable information to assist you in preparing for and raising your pullets. You also will be given the designated Extension office site and date for acquiring your chicks.

	Breed	Plumage Color	Eggshell Color	Mature Body Weight (lb.)	Rate of Lay	Additional Information
	Rhode Island Red	Mahogany red	Brown	6.0	Good	Popular dual-purpose breed. State bird of Rhode Island.
	Dominique	Black with white barring	Brown	6.0	Good	Slow growing heritage breed; one of the oldest breeds in the Americas; rose comb.
	Black Australorp	Black with greenish sheen	Brown	5.2	Very Good	Large loose-feathered birds with good dispositions.
	White Plymouth Rock	Pure white	Brown	7.5	Good	One of America's oldest breeds. Good dual-purpose breed. Corn-based diets may lead to some yellow tint in the feathers.
	Silver Laced Wyandotte	White with black laced feathers	Brown	6.5	Good	Fancy dual-purpose breed popularized largely for color and dual-purpose.
	New Hampshire Red	Chestnut red	Brown	6.0	Very Good	Very popular dual-purpose breed known for good egg production.
	Barred Plymouth Rock	Black and white barring	Brown	6.0	Good	One of America's oldest breeds. Good dual-purpose breed. Average egg production.
	Buff Orpington	Golden yellow	Brown	6.0	Good	Large, loose-feathered bird with a quiet disposition.
	Ameraucana	Varies based upon variety selected	Light green or blue	5.0	Good	Popular breed; varying shell colors in impure commercial strains (Easter eggers, olive eggers)
	Speckled Sussex	Dark brown with each feather tipped with a white spangle	Brown	6.0	Good	Medium-sized bird with a quiet disposition. Plumage, tipped with a white spangle, is distinct, unique, and beautiful.

Credit: Cackle Hatchery, Ideal Poultry, and Murray McMurray Hatchery
 Illustration credit: Cackle Hatchery, Ideal Poultry, and Murray McMurray Hatchery
 Check your county's specific information to know which breeds are being offered in your area.

You should have all of your supplies and brooder ready a couple of days before the chicks arrive. Bring a box to the Extension office when you pick up your chicks. Chicks will be assigned on a first come, first served basis. At this point, you will take them home and begin caring for them.

You will receive a letter notifying you of the date, location, and other important information related to the Chick Chain Show and Auction. Included with the letter will be three flyers inviting folks to come to the auction. You will be required to post the flyers at various locations in your community. The more buyers who are there, the more money the pullets will bring.

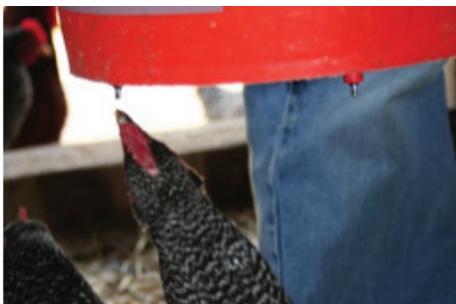
Following the Show and Auction, the remaining pullets from your original 10 or 18 will be yours to keep for egg or meat production.

Supplies You Will Need

- Shelter
 - » Must protect chickens from weather and predators
 - » Must be away from edge of wooded areas
 - » Must provide adequate ventilation
- Feeders
- Waterers
- Thermometer
- Heat Lamp
- Bedding Material
- Ventilation (fresh air)
- Light
- TLC (Tender Loving Care)



Metal nest boxes are easy to clean in the coop.



Water provided by a nipple drinker always stays cleaner.



Chicks will gather under a heat lamp and rest, peeping quietly to themselves.

Basic Poultry Management

Once you receive your chicks, you will be responsible for them for the next 20 weeks or so. How well you do at the 4-H Chick Chain Show and Auction will depend entirely on how well you take care of your birds. Watch the chicks closely for the first day or two, and follow these proven management practices as you raise them.

Brooding. When day-old chicks are received, brooding equipment is necessary to carry the chicks through the first 8 weeks of life. Equipment does not need to be expensive. Most items can be made from available materials around the home. The brooding area with all equipment should be set up and operated for a day or two before the chicks arrive. All equipment should be thoroughly cleaned and disinfected before use.

Draft Protection and Heating. Draft protection for the first few days consists of a corrugated cardboard box. For added protection, you can partially cover the top or have the chicks in an enclosed structure.

There are many different kinds of brooders. Perhaps the simplest is a 250-watt infrared bulb. This provides heat for up to fifty chicks. Bulbs should be suspended 15 to 18 inches above the litter. Heat sources of this type do not heat the air but rather the chicks and litter underneath.

The proper height of the heat bulbs can be determined by watching the chicks and letting them tell you when they are uncomfortable. A

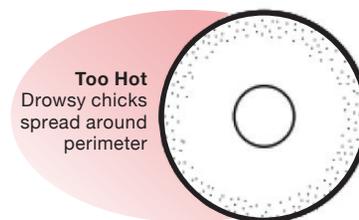
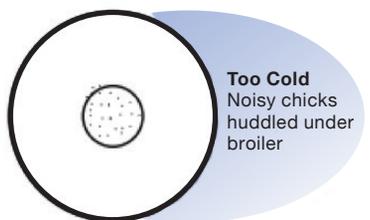
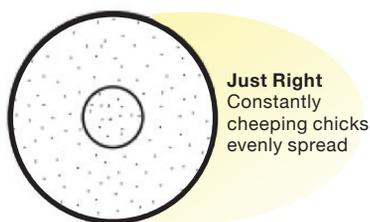
temperature of 90 to 95 degrees F at chick level is necessary for the first week. Generally, the brooding temperature can be reduced 5 degrees each week. This can be accomplished by raising the bulb 3 inches or so per week.

This will allow the chicks to gradually become accustomed to having no heat source.

Watering. Keep water in front of chicks at all times. Easy access is essential to prevent dehydration. Waterers for chicks can initially be inverted fruit jars purchased at the farm supply store. Gallon-size or larger containers may be used later in the project. Provide clean, fresh water daily; sugar water is not needed. Wash the waterers each day and place them on wire platforms to keep the chicks away from wet litter.

Feeding. Introduce feed to the baby chicks 3 hours after they have been placed in the brooder and have had an opportunity to drink. For the first few days, chicks should be fed on egg flats or flat lids until they become accustomed to chick feeders. Feeders can be purchased at farm supply stores.

Always use the correct feed. Seventy percent of the cost of raising chickens is due to feed cost. This is an investment rather than an expense because the better the birds are fed, the greater the return in eggs. The most common mistake





Raise the feeder as the birds grow.

is using the incorrect feed; the second is not providing enough feed. During the first 20 weeks, you can expect each pullet to eat approximately 20 pounds of feed.

Use a commercial chick starter/grower. DO NOT use scratch feed (cracked corn and other grain), laying mash, or table scraps. It does not save money. In fact, your pullets will not grow properly if fed anything but a good chick starter/grower. For example, mixing cracked corn with a complete commercial ration reduces the protein level as well as the vitamin and mineral content. In addition, chickens that are fed scratch grains are less resistant to disease. They will pick at their feathers, which can actually lead to cannibalism. And they will not lay as many eggs as birds that are fed a balanced, complete feed.

Be sure the chicks have fresh feed in front of them at all times, but do not let them waste the feed. Always put the feed in a feeder, and never throw the feed on the ground for the chicks to pick up.

Medicated vs Non-Medicated Feed. Using medicated chick starter is recommended. Most flocks will encounter the internal parasite that causes coccidiosis sometime in their first few weeks. Medicated chick starter provides some protection against the parasites that burrow into the intestinal wall, causing discomfort and damage. The effects of the parasite are significantly reduced if a chick starter is used. Non-medicated feeds are available; however, the chicks will be at a higher risk of severe infection and death.



Cover your outdoor run to keep wild bird feces away from your flock.

Bedding

Litter for brooding chicks should start at 3 to 4 inches deep to provide protection from the cold ground. As your flock ages, they will do fine with less litter. Two inches of litter depth is fine in spring through fall for most flocks. Deeper litter may be needed in the winter.

Shavings are the best possible litter not only due to cost, but also due to absorbency. No scientific evidence exists to prove or disprove whether the use of hardwood shavings is detrimental to chickens' respiratory systems. Simply for the reasons of cost and availability, pine or aspen shavings are a better choice.

Sawdust is suitable as litter, but use it with older flocks so they will not confuse shavings for feed. Straw is an unacceptable litter material because it is not absorbent unless it is chopped to smaller than 1 to 2 inches in length. Ammonia levels in the coop tend to be higher with straw. Other acceptable litter materials may be rice hulls, peanut hulls, chopped corn cob, or sand. Sand is very cold and should not be used when brooding chicks. Sand also becomes very heavy over time.

Space Requirements for Chicks (Per Bird)

Flooring

- 12 square feet through 6 weeks of age
- 25 square feet through 12 weeks of age
- 50 square feet through 20 weeks of age

Feeders

- 25 linear inches through 2 weeks of age
- 50 linear inches through 6 weeks of age
- 60 linear inches through 20 weeks of age

Waterers

- 5 linear inches or a 0.5 gallon fountain through 2 weeks of age
- 10 linear inches or a 1.5 gallon fountain through 6 weeks of age
- 24 linear inches or a 4.0 gallon fountain through 10 weeks of age

Biosecurity

Biosecurity refers to all the things you do to safeguard the health and physical well-being of your flock. You should have clothing and footwear that you only wear out to care for your flock. Wash it weekly. This includes shoes or boots, a hat, specific pants or a shirt that you only wear when caring for your flock. Where do these clothes go when you are not caring for your flock? Keep them in a box by the back door of the house so you can easily change in and out of the clothes.

You will need to set up a footbath in front of the entrance to your flock. Use it every time you come in and out of the coop. Change the footbath solution as it becomes dirty. Usually this is weekly, but it may be more often. Put a lid on your footbath to keep other animals from drinking out of it when you are not using it.

Do not keep bird feeds, bird houses, or bird baths on your property if you are keeping chickens. These wild birds carry diseases such as fowl pox, internal parasites, and external parasites that will cause problems for your flock. Do not allow your flock to come in contact with wild birds and do not let wild birds have access to your flocks feed or water. This may mean that you put up netting to exclude wild birds. Also, if you have a pond on your property, discourage any waterfowl from landing and taking up residence in your pond. Diseases such as avian influenza have affected our nation recently due to failures in adequately separating backyard flocks from wild waterfowl.

Keep your flock locked and secured when you are not actively working with them. That means constructing a predator proof coop, with netting to prevent hawks, owls, and wild birds from gaining access. Use secure wire that is buried at least 24 inches to prevent digging by ground predators. If you cannot bury the wire, then bend it outwards at least 24 inches from the edge of the coop and affix it so it is flush with the ground. Walk the perimeter of your coop daily to check for signs that a predator has been trying to enter your coop.

Do not allow rodents to have access to your coop. During your weekly cleaning, move all equipment and check for holes. Also clean up all feed spills immediately to prevent attracting rodents to a free meal. Put out traps in the feed room occasionally to verify that you do not have rodents. You should also put out traps if you see rodent droppings.

Poultry Health

Vaccinations. The chicks you receive from the Extension office will be vaccinated for Marek's disease before pick up. You will need to follow the directions of the Chick Chain coordinator in your county or region to ensure your flock is vaccinated for fowl pox.

Internal Parasites. Internal parasites can severely reduce the productivity of poultry and cause mortality in the most severe cases. Poultry are infected by a number of internal parasites:

Roundworm. Adult worms are about 1½ to 3 inches long and about the size of an ordinary pencil lead. They can be seen with the naked



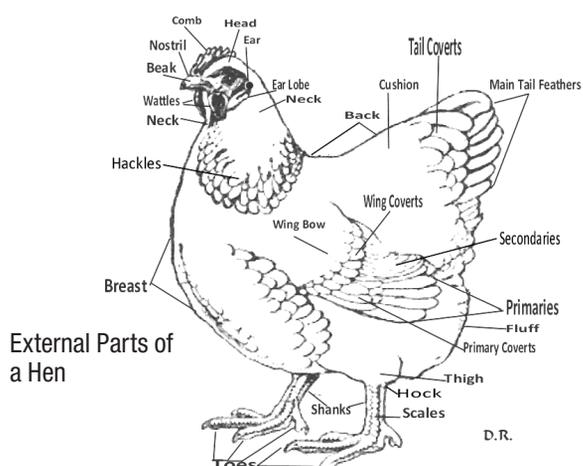
Spray your bird with an approved insecticide if they have mites or lice.

eye. Heavily infected birds may show signs of droopiness, emaciation, and diarrhea.

Cecal Worm. This parasite is found in the ceca of chickens. It apparently does not seriously affect the health of the bird; no marked symptoms or pathology can be blamed on its presence. The cecal worm is primarily incriminated as a vector of the agent that causes blackhead disease. This protozoan parasite apparently is carried in the cecal worm egg and is transmitted from bird to bird through this egg.

Capillary Worm. There are several species of capillary worms that occur in poultry. *Capillaria annulata* and *Capillaria contorta* occur in the bird's crop and esophagus. These may cause thickening and inflammation of the mucosa and occasionally severe losses of birds. *Capillaria obsignata* is the most prevalent of the lower intestinal tract species. The life cycle of this parasite is direct. The adult worms may be embedded in the lining of the intestine. The eggs are laid and passed in the droppings; other poultry pick them up from there.

Tapeworm. This is a flattened, ribbon-shaped worm composed of numerous segments or divisions. Tapeworms vary in size and length. In young birds, heavy infections result in reduced efficiency and slower growth. Young birds are more severely affected than older birds. Poultry become infected by eating intermediate hosts of tapeworms, such as snails, slugs, beetles, ants, grasshoppers, earthworms, houseflies, and others.



External Parts of a Hen



Gapeworm. This is a round, red worm that attaches to the trachea of birds and causes the disease referred to as "gapes." The term describes the opened-mouth breathing characteristic of gapeworm-infected birds. Heavily infected birds usually emit a grunting sound because of their difficulty breathing. Many die of suffocation. The worms appear like the letter Y. Gapeworms are best treated by administering a dewormer at 15- to 30-day intervals.

External parasites. Poultry are also susceptible to some external parasites:

Poultry Mites. Mites may be bloodsuckers, skin borers, or feather dwellers. They may occur in air passages, lungs, liver, and other internal organs. Poultry mites cause retarded

Age	Division
9	Junior
10	Junior
11	Junior
12	Intermediate
13	Intermediate
14	Senior I
15	Senior I
16	Senior II
17	Senior II
18	Senior II

growth, reduced egg production, lowered vitality, damaged plumage, and even death in severe cases. Mites can be observed on feathers around the vent and on tail feathers. The most effective treatment for all mite species is a regular inspection and spraying program of both the birds and their premises. Treatment should be repeated every 10 to 14 days for a month and a half, but may need to be longer if re-infestation persists. Resistance to some treatments is a problem in some cases so make your battle with mites short and decisive.

Poultry Lice. All lice that infect poultry are the chewing type. In general, the incubation period of lice eggs is 4 to 7 days. Development of the lice between hatching and the adult stage requires about 21 days. Lice prefer areas on poultry that are less dense in feathering, such as the area below the vent. The same control measures used to prevent mites will also prevent lice. It is important to apply the insecticides to the birds and to the premises. Follow all manufacturers' recommendations when using all insecticides.

Remember to follow the label on any type of medication or treatment being administered to poultry. Treatment is easy to administer via drinking water. Also remember to check the withdrawal time for eggs and meat. This refers to the time between the administration of medication and when the eggs or meat are safe to eat. Consult a veterinarian with any questions you have concerning the health of your birds.

Poultry Terminology

bantam: a term referring to the size of a chicken, specifically miniature size. Fowl are ¼ to 1/5 the size of their largefowl counterparts; or a true bantam, which has no largefowl counterpart. Body weights vary based on upon the breed.

broiler: a chicken fewer than 8 weeks old, which will cook tender by broiling or frying

cock: a male chicken over 1 year of age for exhibition purposes

cockerel: a male chicken under 1 year of age for exhibition purposes

crossbred: the offspring of parent stock of different genetic makeup

exhibition: birds shown for their outward genetic expression (color patterns, body types, and other characteristics)

flock: Four or more birds kept in one place

fowl: a term primarily for chickens, but also applied to most ground-nesting, seed-eating avian species

hen: a female chicken over 1 year of age for exhibition purposes

largefowl: a term that refers to the large size of chickens (as compared to breeds with bantam counterparts). Weights vary based on breed.

nutrients: the individual components of a feed or ingredients required by an animal

protein: any of a large group of complete organic components essential for tissue growth and repair

pullet: a female chicken under 1 year of age for exhibition purposes

ration: a combination of ingredients (feed stuffs) that supply all of an animal's dietary needs

standard bred: a term often incorrectly used to describe largefowl. This term simply refers to a breed that is found within the American Poultry Association's Standard of Perfection, which is the book that provides both the written and visual description of all accepted poultry breeds.



Showmanship

Poultry showmanship is an opportunity for young people to demonstrate their abilities as poultry stewards and to communicate their knowledge of poultry husbandry to others. Showmanship is a *people-focused* activity. The bird serves as a prop, while the young person does the performing. The exhibitor's attitude, appearance, speaking ability, care and management skills, and willingness to follow instructions are all on stage. This time is dedicated to one-on-one interaction between the exhibitor and an experienced poultry judge. Showmanship classes are divided by the age of participants as of January 1 of the project year.

Frequently Asked Questions

Q: What type of showmanship skills should be expected of youth ages 9 to 11?

A: The focus for this group is on the basics. Instructions should be brief and to the point. Personal safety and the well-being of the bird is stressed.

Appropriate skills will include carrying and posing the bird properly and placing and removing the bird from the cage.

Questions about basic management and responsibility are considered fair. Exhibitors should know simple anatomy and have the ability to identify the breed, variety, sex, and class of the showmanship bird.



Q: What type of showmanship skills should be expected of youth ages 12 to 15?

A: This is usually the largest, and often the most competitive, group in the contest. Handling capacities should be more developed. The ability to pass the bird as well as examine the wings, under-color, feet, and head will all be expected.

This group should be capable of explaining and elaborating. Exhibitors should be able to do physical examinations and oral evaluation of their bird. Questions about poultry diseases, parasites, defects, disqualifications, and additional anatomy are considered fair.

Q: What type of showmanship skills should be expected of youth ages 16 to 19?

A: Abilities vary significantly in this group. Some contestants may have 8 or more years of poultry experience while others are newcomers.



A chicken with a cross-beak is not a good choice for the show.



Crooked toes are a defect and this bird should not be shown.

In general, these teens should be capable of all handling skills as well as logical thinking and problem solving. This group is expected to give cures associated with poultry diseases and remedies for poultry management problems. This group of exhibitors is expected to have a broad poultry vocabulary and do well with terms and definitions.

Q: What equipment should I bring to the show?

A: You may bring as much or as little to the show as you desire. This is a personal choice. However, you should plan to bring the following items:

- small paper cups (3 ounces), plain paper cups, or disposable plastic bottles cut in half
- Water and feed for show day
- Containers to transport pullets to show

Q: What should I wear on show day?

A: Exhibitors should take pride in their appearance. Appropriate clothing includes a 4-H shirt (short or long sleeves) or other green or white shirt, pants, and closed-toed shoes. Shirts should be tucked in, hair combed, and appearance clean and neat. Shorts, trendy clothes, shirts that advertise, hats, chewing gum, alcohol, and tobacco are all inappropriate.

A good practice is to bring clothes to wear as you prepare for the show and then a change of clothes for exhibition.

Q: How will the bird's appearance be judged?

A: The emphasis in showmanship classes is on presenting a bird that is well cared for and an exhibitor that has knowledge of the bird's characteristics and husbandry needs. The bird should show clean, unbroken feathers as well as clean legs and feet. The comb should be intact and free of scars and blemishes. The bird should not be molting. Birds with feathered feet should show clean, intact toe feathers with no manure matted in feathers. Birds should be free of defects.

Judging Your Poultry

The birds will be judged on both their breed characteristics (1/3) and their production characteristics (2/3).

- Crooked keel bone
- Breast blisters
- Bumblefoot
- Deformed or incorrect number of toes for the breed

Chick Chain Show and Auction

The 2 or 3 pullets you bring to the 4-H Chick Chain Show and Auction become the property of the Extension office to sell. The proceeds from the auction are used to offset expenses accrued during the project. This completes the chain.

For the betterment of 4-H Chick Chain, you should present and market your project to the best of your ability. In return, you will have the remaining pullets at home, which you can use to start an egg laying business, harvest for meat, or sell.



Alabama 4-H
Alabama Cooperative Extension System



4HYD-2044

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For more information, contact your county Extension office. Visit www.aces.edu/directory.

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DO YOU LIKE SCIENCE?

Field Technician: Work with farmers to trouble shoot health and housing problems!

Veterinarian: Work with farmers to help improve poultry health within their flocks!

Nutritionist: Design feeds and evaluate feed and ingredient quality to make sure the animals are getting the best nutrition they can!

Hatchery and Feed Mill: Support poultry farmers with essential products they need to support their flocks!

Food Safety Quality Control: Help maintain the high standard of quality for food products.

Food Product Development: Poultry companies are constantly testing new food options!

Genetic: Research chicken strains to provide safer and more nutritious meat choices!



DO YOU LIKE BUSINESS?

Agricultural Sales: Help poultry companies sell safe and delicious food to consumers, or get involved in selling products to the companies themselves!

Finance: Poultry companies are very large enterprises, and always looking for math-lovers to keep their money on track!

Human Resource Management: Poultry Companies employ thousands of people! Taking care of employees is very important to these large companies.

Agricultural Lending: Both to poultry farmers and poultry companies in the industry alike!

Computer Science: Because technology is always advancing, poultry companies need employees with computer expertise.



CAREERS WORKING WITH CHICKENS



Did you know the poultry industry in Alabama is a **huge** part of the economy of our state? It accounts for tens of thousands of good-paying and scientifically-interesting jobs. If you **enjoy** working with chickens, you may find a job to your liking in the Alabama Poultry Industry.

Chickens are fun to raise because they produce eggs and help you **learn** about agriculture. If you're interested in **agriculture** and food production consider the **jobs** available in the poultry industry and those industries that sell products to the poultry farmers and major companies!

FOR MORE INFORMATION
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