

Raising Broilers and Roasters as 4-H and FFA projects

The phrase “Chicken on Sunday” has nearly fallen out of the English language except for a few who grew up at a time when chicken dinner was a highly prized favorite. Today’s poultry industry has turned an exclusive delicacy into an everyday commodity.

The development of the modern broiler or fryer has made chicken meat plentiful, economical and extremely versatile. The American consumer and the world market have lined up to take advantage of this nutritious source of protein and flavor for the palate.

4-H and FFA members have found these modern meat chickens to be a profitable and rewarding learning experience. Backyard poultry enthusiasts have also found the advantages of raising these meat birds for the home freezer or niche markets.

Raising broilers as a 4-H or FFA project

Many poultry project members page through a hatchery chick catalog or the American Standard of Perfection dreaming of the county fair champions that they want to raise. Unfortunately, too often, these dreams turn to failure and therefore a well-minded project becomes a disappointment. Raising broilers as a project is an excellent first-step in the process of learning poultry husbandry and can result in high rewards.

Raising pure breeds of poultry requires much more skill, time and effort than it might seem at the onset. Hatcheries that provide catalogs of beautiful show birds do an excellent job of providing healthy, representatives of the many breeds and varieties poultry at a commercially competitive price. However, those who have raised exhibition poultry will quickly point out that hatching large quantities of show chicks is a difficult task.

Hatcheries often sacrifice the show-quality of their breeding stock for birds that produce a large quantity of highly fertile eggs. So an exhibitor, who orders chicks from a hatchery, might be disappointed with the results in the show ring after a long spring and summer of growing and caring their birds.

Purchasing chicks from a breeder of exhibition quality birds might also be challenging. First of all, a breeder may have invested a lifetime of work to develop a line of high quality birds. Each offspring that is produced is vital to that breeder’s plan to produce show champions and breeders for the next year. As a result, the breeder may be very reluctant to part with even a few of their prodigy.



Raising broilers or roasters as a 4-H or FFA project can be rewarding, educational and fun. Meat-type chicks are readily available and provide the opportunity to learn how to raise chickens with a minimal investment in equipment and facilities.

Secondly, locating breeders of the specific breeds that you want may also be difficult. Since breeders often specialize in only one or just a few breeds and varieties, the youth project member may need to travel some distance to find a breeder that is willing to sell birds that he or she wants.

Finally, most purebred poultry breeders are more than willing to pass on their expertise and their bird's genetics to a young person, but they may want to sell only adult breeding stock. If the breeder is willing to sell chicks, he/she will want to make sure that their birds are going to go to an individual who is committed to the project, who has a proven record of successfully raising poultry and who understands the daily routine that is necessary to raise prize-winning birds.

For these reasons, raising broilers or roasters is an excellent starting point for most project members. The chicks are relatively readily available, inexpensive, and easy to raise in a short period of time with very limited facilities.



These roasters were raised in part of a small utility shed in the backyard of this member's home. Fresh water, quality feed and a clean environment will result in a successful project.

Getting Started

The first step in a broiler/roaster project is to make sure that the municipal ordinances where you live will allow you to raise chickens of any kind. Property that is zoned "Agricultural" will have no restrictions on raising a small poultry project. Many cities now have variances that allow residents to raise a small number of birds. Suburban subdivisions may also have deed restrictions on the number and kind of animals that residents may have. Check with your local officials to be sure. This is a good lesson in citizenship as well as being courteous to your neighbors.

Even if your locality does not allow you to raise them on your property, there are ample opportunities to raise your birds cooperatively with another project member that lives where there are no restrictions. Since a broiler project is only 6 weeks long, an agreement could be made with a nearby farm-owner to use facilities for raising your birds. Such agreements, if properly completed, could lead to expanded projects and even employment opportunities!

Equipment and facilities

The equipment and facilities that are necessary to raise broilers or roasters are the same as for any poultry. An adequate water supply, typically a one-quart waterer at first and a gallon-sized or larger waterer is appropriate as they grow. Fresh, clean water is essential for proper chick health and growth.

Simple chick feeders are used at first but a larger feeder will be necessary as the chicks grow. Keep in mind that these birds will double their size in only a couple of days and will continue to grow rapidly through their first six weeks. They will need an ever expanding daily water and feed supply.

Brooding may be done in a facility as simple as a large cardboard box with a heat lamp suspended about two feet above the floor. Wood shavings may be used as bedding, but must be kept clean and dry. Again, it must be stressed that these birds are bred for rapid growth and cleaning their brooder will be necessary quite often. More elaborate brooders with hardware cloth floors may be used, if desired and available. The temperature at “chick level” should be 95 degrees F for the first week and decreased 5 degrees for each week after that.



A simple cardboard box, heat lamp, feeder and water are all that are necessary to start broiler chicks. In a few days they will have doubled their size and in six weeks they will have grown into a marketable sized broiler.

Since most county fairs occur during the summertime, very little supplemental heat will be necessary for brooding. However, baby chicks do not tolerate drafts. Solid sides to the brooder or draft-free housing should be provided. Adequate fresh air and ventilation is essential to prevent respiratory disease.

As the birds grow, additional space should be provided. Small numbers of birds (4-5) can be grown out in a large rabbit cage suspended several inches from the floor. This will insure a dry environment for the birds. Larger numbers of birds can be allowed to range freely on grass or on the ground in a cage that is moved frequently throughout the day.

Proper shade and cooling is as essential for older birds as heat is for the babies. Never leave your birds in the hot summer sun without the opportunity to escape to a shady cool area. Today’s fast-growing, large, muscular meat birds cannot tolerate over-heating for long.

Source of chicks

There are a number of commercial hatcheries that can provide hybrid meat-type chicks and are sold through catalog orders and delivered by mail. Many local feed suppliers team up with hatcheries that deliver chicks directly to the store. These regularly scheduled “Chick Days” are exciting times at the feed mill and attract great attention by all of the customers!

Pre-order chicks so that broilers arrive 42 days and roaster arrive 56-70 days before show day. Environmental factors (such as extremely hot summer temperatures) could affect the growth of your birds.

Making multiple order of chicks + or – a few days will assure a range of birds that will be properly finished for your show day.

Meat-type chicks are typically purchased for less than \$1.00 each depending on quantity. Cooperating with other project members to “pool” an order can reduce costs.



A project member will learn the science and art of growing animals by raising broilers. Chicks are available from commercial hatcheries or may be ordered at a local feed supplier.

Feed

Commercial feed suppliers produce excellent quality feeds. A typical chick starter feed will get your birds growing from day one. A finishing ration will provide the nutrition necessary to insure proper muscling and fat at the end of the project. Consult your feed dealer for recommended rations.

Organically produced feed can provide an alternate choice and will make your birds available to that niche market. A crumble feed will maximize growth and feed efficiency.

Some project members remove the feeders each night, returning them early the next morning. Though growth might be slowed slightly, evidence shows that the birds, especially males, will be structurally more sound at show time due to growth while standing, rather than sleeping. Commercial growers provide distinctly different rations for males and females to encourage structural soundness. This is often impractical for the small project grower.

Typically, it will only take about 2 pounds of feed per pound of growth for broiler-type chickens. Keep in mind that your broilers will eat about 10 pounds of feed from start to finish, so you don't want to purchase extra feed. The feed efficiency of roasters is less than broilers.

Some project members are surprised to find that these chicks eat a lot of feed in a short period of time and grow so rapidly. This means that they will also produce a lot of manure that should be cleaned frequently to maximize growth. Cleanliness during the entire growing period is essential to having a clean-white bird on show day.



Broilers may be raised in wire cages or on grass. It is essential to protect them from varmints such as raccoons, opossums and hawks.

Growing Period

Because of their genetics, rapid growth and warm summer-time weather, your chicks will seem to grow faster than their feathers! Often they will appear “half naked” for most of their growing period. This is normal and you should not be concerned. Your birds are bred and fed for meat production! A full cover of feathers would reduce feed efficiency and might indicate cooler than normal growing temperatures or some other decreased growth factor.

Weighing your birds and charting their growth daily is a good way of understanding the growth cycle of a broiler or roaster. Broilers will typically double their weight in their first couple days of life and will gain as much as one and a half to two pounds in the last week.



Weighing your birds daily and charting their growth will give a good indication of their health and efficiency.

Getting Ready for Fair

If you have managed your birds properly for the start through the growth period your birds should be in great shape for your fair. Select your show birds carefully according to the criterion explained below.

Make sure that you know the proper procedures for entering your birds in the fair and the proper health documents that are necessary for making an exhibit. Learn from your leaders and older project members the proper methods of handling your birds and showing them. Give yourself plenty of extra on show day so that

your birds will be ready and do their best. Listen to the judge's comments and learn how to improve your project.

Take good care of your birds during the fair. Keep them clean, watered and fed the same ration that you use at home. Some will even bring water from home so that it tastes the same for the birds. Because county fair time is usually the hottest time of the year, do whatever you can to keep them cool. Other livestock exhibitors use fans on their cattle, sheep and hogs—you should do the same for your poultry project.



It's show day! Many members get a rewarding feeling of accomplishment when they have done a good job of raising and preparing their birds for the County Fair. These friendships and experiences will last a lifetime!

Processing Meat Chickens

There are many good sources information on slaughtering and processing meat chickens. Read the information carefully. Ask questions of those who are experienced and perhaps set up a time with your project leaders to cooperatively process birds with other project members. There are a number of custom slaughter plants that will process meat chickens, inspecting them for wholesomeness, making them available for commercial sales.

You will find your broiler or roaster project very educational, rewarding and fun!



“Learning by doing!” Many aspects of broiler project can be enhanced by cooperating with other project members. Those who live in a city can raise their birds with a project member who lives on a farm.

Judging Meat Chickens

The criterion used for judging meat chickens is based on USDA Standards for Grading Poultry and animal husbandry practices.

Disqualifications-these factors would prevent the bird from being slaughtered for food purposes - automatic pink ribbon

Crippled-unable to stand and move normally, blind, crooked breast bone, breast blisters, broken bones, skin cuts, bruised flesh, illness and parasites (removed from the showroom by superintendent), absence of fleshing and finish (fat), objectionable dirt, staining and filth.

Properly fitted and groomed meat chickens are raised in immaculately clean conditions and are bathed prior to the show with oil applied to the combs, wattles, feet and legs prior to judging. Beef, sheep, swine and dairy project members are very aware of this fact.



This 42 day-old broiler exhibits the desirable characteristics of a quality meat chicken. It has no disqualifying factors and is the correct age and weight with proper conformation, fleshing and finish.

Desirable Market Factors

Proper and age weight for class – Most fairs establish the desirable weight **20 points**

Broilers - >3.5 lbs. <6 lbs. >42 days <49 days

County fair projects typical give more range of weight and age than the industry standard allows because of the wide number of uncontrollable factors for youth projects such as climatic conditions, date of delivery of chicks and population density.

Broilers should exhibit “youthfulness” determined by appearance and the lack of molting of juvenile primary flight feathers. Chickens have 10 primary flight feathers. The juvenile feathers are pointed at the ends. Molting typically begins at 42 and continues with 2-3 feathers per week until all 10 have been replaced with adult feathers. Birds that are slaughtered prior to molting primary flight feathers produce the greatest amount of meat per pound of feed consumed.

Roasters - >6.5 lbs <8.5 lbs. >56 days <70 days

Though the 14 or 15 pound roasting chicken is very impressive and niche markets demand heavy birds, industry standards require a much lighter bird that is more efficient in conversion of feed into meat. Heavy roasters often suffer leg problems.

Roasters should exhibit more maturity than broilers (observed by the redness of combs and wattles) yet should never be sexually mature and should still have numerous juvenile primary flight feathers. Sexually mature birds have a low dressing percentage due to the loss of inedible large reproductive organs and excessively large bones.

Conformation (20 pts)– Like all animals, meat chickens should be structurally sound. They need to walk on a proper set of feet and legs and move freely and easily. Obvious extremes in body shape and structure are undesirable and lack “eye appeal.”



Sound feet and legs are essential for a bird to live and grow properly. Heavy bone structure is associated with heavy muscling. A judge will reward a bird that has sound conformation with a high placing.

Fleshing (20 points) – The amount of muscling is determined by feeling the width of the breast and back particularly over the loin region. The breast meat is the most valuable cut of meat on the meat chicken because it yields “white meat” which commands the highest market price. The width of the loin is an indicator of muscling throughout the carcass much like the loin eye area of a beef steer or market hog. The thickness of bone also indicates muscling due to the fact that the more muscling an animal has the larger the bone must be to hold the muscle. Excessive bone is not desirable because of decreased dressing percentage.



The breast meat is the most valuable part of the chicken. The bird on the left shows a broad breast with adequate amount of finish while the bird on the right lacks in overall width. The judge will handle each bird to determine the amount of meat in the breast, through the thigh and over the back.

Finish (20 points)– Fat provides flavor and tenderness to meat. Adequate fat is desirable, yet excessive fat reduces feed efficiency, overall yield and dressing percentage. Pullets tend to fatten faster than cockerels due to the affects of the sex hormones estrogen and testosterone.

Industry producers typically sex broiler chicks at day-old and separate them, providing specific rations for each, reducing concern for excessive fat.

General appearance (20 points) – As in other meat animal species, female chickens tend to offer more “eye appeal” than males because estrogen causes a “rounder” body structure, thus a “meatier” and “youthful” appearance in the live animal. Therefore, project members are encouraged to raise pullets as broilers rather than cockerels (unless the classes are for single males and single females). Pullet chicks are generally 10-12 cents cheaper than cockerel chicks as well.

Matching pairs **10 Points**

Like other meat animals, broilers and sometimes roasters are shown in pairs. This exhibit is intended to determine if the exhibitor understands the basic principles of meat chickens. Pairs are intended to be matched as closely as possible.

This means that they should appear as “peas in a pod.” A pair exhibit simulates the industry’s need for uniformity in birds that ultimately produce a uniform product that the consumer demands. The industry has uniform methods of processing millions of broilers and the consumer demands that each broiler or cut of meat purchased be identical to the previous.

The most confusing part of matching pairs of animals is the fact that a pair of meat animals are **the same sex!** This exhibit should be either two cockerels or two pullets.

They should weigh nearly the same, have similar body structure, fleshing and finish. Matching a pair may be difficult when only a small number of birds are being raised. If one of the birds shows a disqualification or serious defect, both will be judged as a pink ribbon winner.

Since broilers purchased from one supplier have nearly identical genetics, the environmental factors in which a group of birds are grown have a tremendous impact on the bird that is produced.



A pair of broilers should look like “Two peas in a pod!” A matched pair must be the same sex. Typically, pullets have more “eye appeal” because their body structure is round and they finish faster than males.

Historical Background

Initially poultry were brought to the New World as a source of food for the sailors and pioneers for their long boat ride. Those birds not consumed on the trip were raised on the newly established farms. These birds were “landraces” or animals without specific selective breeding.

During the 18th century, the idea of selective breeding using specific criterion was perfected by Sir Robert Bakewell of England. Bakewell developed distinctive breeds of cattle, horses, and sheep using this concept.

The “Golden Age of Purebreds” developed in the late 19th century and early 20th century when Nouveau riche industrialist and progressive farmers put their effort into improving all forms of livestock by forming breed associations and clubs. The American Poultry Association was the first such organization in the United States.

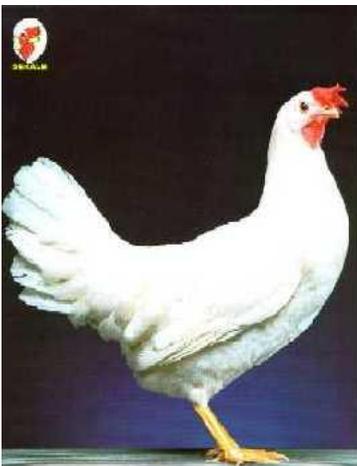
The economic value of a breed of poultry was weighed against its performance in the show coop. Not only did the breed need to produce eggs or meat, but also had to have the proper colored feathers, comb type or body shape as prescribed by the breeders in the Standard of Perfection.

Maintaining such criterion limited the productive characteristics of the bird. Until the 1950’s and 60’s farm-raised meat chickens were often 25-40 weeks old, extremely lean and slow growing, especially when allowed to run freely on the farm. Feed suppliers would often give farmers leghorn cockerels while selling an adequate supply of chick starter/grower ration for the batch of birds. By the time these chicks grew to an appropriate size to butcher (or when time was available) these male chickens will have developed sexually and thus very protective of their territory. This led to many frightful encounters with a zealous cockerel by youngsters unaware of the danger.

The practice of caponizing (castrating) chickens served two purposes. First, capons produced large carcasses and when properly fed, tender meat and an abundance of fat for flavoring. Second, without the presence of testosterone, males were docile and easily handled. Capons were highly prized in the markets through the late 1940’s and early 1950’s.

With the success of hybrid corn, developed in the early 1900’s, seed corn companies, Land Grant Colleges and other companies experimented with the development of hybrid chickens (and other livestock) during the 1940’s.

With emphasis on egg production, the Wallace family of Pioneer Hi-Bred Corn Company began producing the Hy-Line of hybrid chickens. The DeKalb County Agriculture Association also began producing hybrid chickens. Others developed localized and nationally known lines of hybrid egg production birds. Today, U.S. production of eggs is nearing 91 billion eggs per year.



The meat chicken genetic industry dates back to numerous farms specializing first in standard breeds, primarily the White Plymouth Rock and the Cornish. Today, four major companies provide most of the genetic seed stock for hybrid meat chickens world-wide. These companies are Aviagen, Cobb-Vantress, Hubbard Farms

and Hendrix Poultry Breeders. Over 36 billion pounds of broilers (8.8 billion head) are produced each year by U.S. farmers. Over 16% of the broiler meat produced in the U.S. is exported.



As American farms consolidated and specialized production, ever increasing sized broiler farms began to appear in the late 1950's and 1960's. Most of the production today is contracted to approximately 50 poultry companies by individual farmers. The five leading states in broiler production are Georgia, Arkansas, Alabama, Mississippi and North Carolina. These five states currently produce more than 60 percent of all broilers.

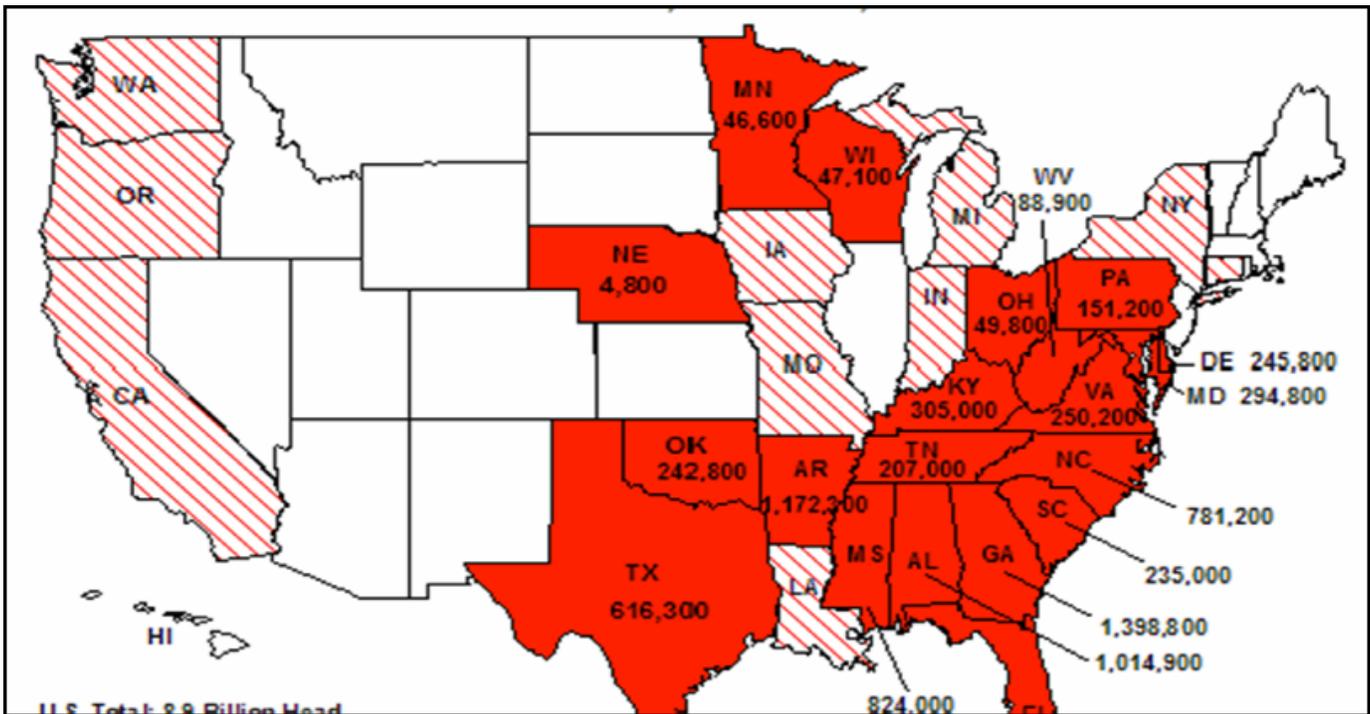
The leading poultry companies are Tyson Foods, Pilgrim's Pride, Perdue Poultry, Sanderson Farms. Gold'N Plump, St. Cloud, Minnesota contracts and processes most of the broilers produced in Wisconsin.



Commercial chickens typically have white feathers. This produces desirable carcass characteristics and reduces the possibilities of undesirable black pin feathers (undeveloped feathers under the skin).

U.S. Broiler Production

Number produced in thousands 2007



Red states indicate 90% of total U.S. production of 8.8 billion head

Striped states indicate the balance of U.S. broiler production

Terminology

Broiler or Fryer – A young chicken, cockerel or pullet, approximately 42 days old. The two terms are interchangeable, having regional preference (Broiler – northern states; Fryer – southern states). Typically marketed at 4-5 pounds live weight and 3-4 pounds dressed weight. The meat of these birds is tender and lacks strong flavor.

Capon – male chicken that was castrated at 6 -12 weeks of age. Marketed at 20+ weeks of age, prized for flavorful meat with a high percentage of fat.

Cockerel – young male chicken

Crossbred – Animals that are the result of crossbreeding two or more purebreds are called crossbreds. Often the crossings are indiscriminant and result in a wide variety of colors and body shapes that only remotely resemble the breeds that they were from. Crossbreds do not breed true, therefore their offspring seldom resemble their parents.



These are examples of a crossbred chicken with no specific distinguishing features that will be passed on to the next generation.

Heavy roasting chicken – Male of female meat-type chicken weigh 12-14 pounds live weight with some individuals even heavier! They typically dress an 8-11 pound carcass that must be cooked slowly at reduce temperatures in order to provide a desirable, tender entrée.



A roasting chicken is more mature than a broiler, is larger and is cooked at a lower temperature for a longer time.

Hybrid – When two inbred animals are crossed, they produce hybrid offspring. The offspring inherit the best characteristics of each parent. Hybrids also receive a genetic phenomenon called hybrid vigor—extra energy gained by crossbreeding. They grow faster, more efficiently and reproduce better than either parent. Genetically, hybrids are said to be heterozygous because their pairs of genes are different.



Breeding companies develop inbred lines that have been selected for specific economically important features. When two inbred lines are crossed, the offspring are called a hybrid line.

Inbred – Animals that are specifically bred for their commercially valuable traits that can be passed on to their offspring. Inbred chickens are produced by breeding close relatives together for seven to ten generations. Genetically, these birds are highly homozygous for these traits; their pairs of genes are identical. Each generation is selected based on a very limited and specific criterion of production qualities, such as width of breast meat, feed efficiency or heat tolerance. These birds will only be developed and raised by the commercial breeding operation.

Pullet – young female chicken

Purebred – Animals that breed true to color, body shape and other physical features. There are over 100 recognized breeds of large fowl and bantam chickens. Historically these breeds were divided into “Heavies,” “Lights” and “Dual Purpose.” The heavy chickens included the Plymouth Rocks, Road Island Red and Brahmas and were prized for their meat as well as brown eggs. The light chickens included the Leghorns, Minorcas and Anconas and were noted for their production of a large number of white shelled eggs. Dual-purpose breeds produced a large quantity of tinted eggs as well as a quality carcass. These breeds included the Sussex,

Orpington and Australorp. Each purebred has its specific historical, ethnic and geographical origin. Genetically, purebreds are referred to as “homozygous” because they possess a genetic makeup that is composed of many identical pairs of chromosomes (alleles).



A Purebred White Plymouth Rocks will pass their genetic characteristics to their offspring so that the chicks will appear to similar to the parents.

Stewing Hen or Soup Chicken—A sexually mature chicken, typically one year or more old. These carcasses will produce a flavorful broth when cooked slowly by simmering in a pot of water. Flavor and cartilage is extracted from the muscle and bone, providing a soup stock. The small amounts of meat can be stripped from the skeleton and added back into the final dish. *Spent hens*, laying hens that have completed their laying cycle are often used for this purpose.

Young roasting chicken – Male or female meat-type chicken weighing 7-8 pounds live weight and 5-6 pounds dressed weight. Typically, these chickens are 8-10 weeks of age. The meat of these birds is tender but possesses more flavor than the broiler/fryer.

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