

# Raising Broilers and Turkeys for Competition

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## Introduction

Before raising broilers for competition, you should ask yourself one question: "Am I up to the challenge of caring for broilers or turkeys for several weeks?"

Birds require regular care and feeding throughout their lives. It is virtually impossible to have birds "catch up" once they have fallen behind on weight or fleshing. Raising birds requires an extra commitment of time, patience, dedication and concern for the animals involved. Persons who cannot put forth the effort required should probably not begin the process.

Raising winning broilers and turkeys involves four general steps:

- Providing the birds with an environment conducive for growth and development,
- Feeding a diet which adequately supplies all of the bird's nutritional needs,
- Choosing the birds with the best potential to win and
- Keeping adequate records.

This publication outlines the process of producing winning broilers and turkeys.

## Optimum Environment

Planning and preparing adequate facilities before the arrival of the birds allows birds to adapt to their new

environment with a minimum amount of stress. Facilities should provide birds with ample space, plenty of ventilation, proper temperature and adequate protection from the elements and predators.

While good facilities and feed which meets the nutritional needs of the bird are crucial for rapid growth, poor management or bird care can undermine all the previous efforts. Checking the birds, particularly at times of the day when the temperature is changing, and making appropriate adjustments are the only ways a proper environment can be maintained.

The good flock manager will become familiar with the birds by watching and listening before disturbing the birds. Contented young birds are often active and chirp softly, while uncomfortable or sick birds vocalize loudly, huddle together or act listless.

A good manager will not tire new chicks or young poults since excessive handling and stirring will cause birds to be more susceptible to stress-related disorders. Young birds require more frequent and longer rest periods than older birds. A good rule of thumb is to allow new chicks (0 to 6 days of age) a minimum of two consecutive hours of undisturbed time four times a day followed by eight to ten hours of undisturbed nighttime rest.

Modern strains of broilers and turkeys are almost a biological phenomena because of their ability to achieve rapid growth with excellent

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feed conversion. However, genetic selection, particularly for broilers, has sacrificed normal early feather development and hardiness for rapid meat development. This means that birds remain more vulnerable to temperature extremes for a longer period of time. In addition, these rapidly growing birds have very high nutritional requirements, and there is little flexibility to overcome poor diets or extremes in temperature and ventilation even for short periods. Thus, it is essential that birds have everything they need in the way of environment and nutrients so that maximum performance can be achieved.

Birds, like other animals, have a sense of whether the temperature in their environment is hot, cold or just right. When the birds sense that the temperature is just right, they are said to be in the middle of their “thermoneutral zone.” In this thermoneutral zone, birds expend a minimal amount of energy keeping warm or cooling off. If the temperature is higher than their thermoneutral zone, birds expend energy keeping cool and can be heat stressed. If the temperature is lower than the thermoneutral zone, birds expend energy maintaining their body temperature. Research shows that birds, particularly broilers, perform best when kept at a temperature that is on the low end of their thermoneutral zone.

If all birds huddle under the brooder or huddle tightly together in small groups, the temperature is probably below their thermoneutral zone. If birds are on the edge near the brooder guard or they pant, they are probably above their thermoneutral zone. If birds are snuggled in small groups under the brooder and around the grow area, they are probably in their thermoneutral zone. Providing birds with an environment in their thermoneutral zone means that the energy they might have used adjusting their body temperature will now be used for growth and development.

Table 1 provides estimates for desirable temperatures during the development process. As birds age they develop the ability to regulate their internal temperature and, therefore, require less and less supplemental heat. Since supplemental heat is necessary for at least the first week for broilers, placing feed pans or the water source near but **not** directly under the heat source is important. Both water and feed can become too hot for the birds to eat. If feed or water is warm when touched with the wrist, then it is too warm for the birds to eat.

The rapid growth rate of the modern bird means that oxygen requirements are relatively high. Modern birds are very intolerant of stuffy, stale environments. **Good ventilation to provide fresh air is critical.** While day-old chicks should be protected from drafty environments, it is still important to provide birds with a source of fresh, clean air.

**Table 1. Temperature Guideline for Broilers and Turkeys**

Age (Days)	Broilers (F°)		Turkeys (F°)	
	Day	Night	Day	Night
0-4	88	90	90	92
4-8	86	88	90	92
8-14	84	86	88	90
14-21	82	84	86	88
21-30	80	82	84	86
30-35	78	78	82	84
35 on	76	78	80	82
Over ten weeks	--	--	76 or cooler	78 or cooler

These temperatures are targets. When possible give birds access to additional space which is up to ten degrees lower in temperature. This gives birds a chance to pick their own optimum environment.

High environmental temperatures combined with high relative humidity (RH) is a common detrimental environment particularly in broilers and turkeys over three weeks of age. Since birds do not sweat, they must rely on their respiratory system for evaporative cooling. If the RH is high, the air is nearly saturated with moisture, and poultry become unable to lose their heat-laden moisture. The ideal RH for birds is 50 to 60 percent. When dry bulb temperatures in the nineties combine with high humidity, birds cease feed consumption, increase water intake, sprawl across the ground, pant and act listless. Prolonged exposure to these conditions results in a reduction in growth which birds may never overcome. Heat stress can even occur in new chicks, but, generally, the larger, heavier birds are the most susceptible.

The effects of heat stress can generally be reduced by increasing the air flow or ventilation rate in the facility. A box fan blowing directly across the birds can be as effective as an elaborate ventilation system. As with temperature, the appropriateness of ventilation rates can be determined by bird behavior. Watch for signs of crowding around the air flow, indicating too little air flow or too hot. If there is too much ventilation, birds will move away from the air flow. Ventilation rate adjustments should be changed in small increments to allow birds to adjust and conditions to stabilize. The ventilation rate should be adjusted until birds are uniformly spread across the grow-out facility. Another sign the environment is ideal is birds eating and drinking.

**NEVER make rapid or drastic changes in the environment unless birds are in danger of dying.** When humidity is low and temperatures are high, evaporative cooling with cooling pads and fine mist foggers or sprinklers is a very effective way of

cooling the birds because water, as compared to dry air, can hold more heat. **HOWEVER**, it is important not to saturate the litter or floor with moisture since the excess moisture can increase the RH and, in turn, increase heat stress. In addition, wet litter can cause ammonia production, increase coccidiosis outbreaks, enhance disease transmission between birds, cause foot sores and possibly cause breast blisters.

Floor space and type can have an impact on bird performance. Raising birds on wire will not produce winning birds. Plan to provide a minimum of two square feet per broiler after four weeks of age, and provide turkeys with a minimum of three square feet after ten weeks of age. The quality and type of bedding material utilized in the grow area can have a tremendous impact on performance. A good bedding material should stay dry, provide a cushion for the feet and breast of the birds and not encourage the birds to consume it. Bedding material should also not be a source of disease. Bedding material that is wet, moldy or dusty can lead to respiratory problems and even death. Once birds become sick because of moldy bedding material, they cannot be cured. Kiln-dried pine shavings are the best material. Rice hulls work very well for broilers, but they may not be the best choice for turkeys because of their tendency to eat hulls instead of feed.

Good moisture levels for bedding are 20 to 35 percent. A good rule of thumb to determine when litter is becoming too wet is to squeeze a handful of litter material and, if the material sticks together, it is too wet. Good air movement across the bedding material can help minimize the moisture content. Do not place extra equipment or materials in bird pens. Birds do not require perches. Birds perform best if given as many hours of light as possible with at least one hour of darkness. The one hour of darkness is more of a safety factor. If the lights ever fail, the birds are used to a darkness and will not panic and pile on each other.

## Feed

Raising poultry for competition involves providing the most appropriate feed so that the best bird can maximize its potential. Understanding which nutrients are critical for muscle, skeletal and immune system development helps in choosing the most appropriate feeding program.

Feed should supply balanced and adequate levels of protein, energy, calcium, phosphorous, vitamins, trace minerals and salt. Protein is required to build muscle tissue and to maintain the immune system. Energy is required for birds to eat, move and breathe as well as build and maintain muscle. Calcium and

phosphorous are needed for proper skeletal development. Vitamins, minerals and salt are required for the birds to function and grow normally. As the bird ages, the growth rate begins to slow; therefore, protein needs begin to drop while energy needs increase, because now the bird must not only grow but must also take care of the tissue it has already made. Since growth often occurs in rapid spurts throughout the growth cycle, a continuous supply of clean and fresh feed and water is essential so that when growth occurs, the fuel is available.

A big key to successful show bird rearing is frequently stimulating the birds to eat. Birds that are rarely stimulated to eat will typically gorge, filling their crops to the maximum when feed is available. Yet maximum growth occurs when birds are trained to eat a series of small "meals." Training birds to be "meal eaters" should start at day one and be consistent throughout the life of the birds. Training can be as simple as shaking the feed or pouring a scoop of feed into the feed trough. Since poultry are creatures of habit, frequently stirring the birds in a calm quiet manner can also train the birds to eat several times a day. At first birds may be frightened, but if training is continued in a calm and consistent manner, birds quickly learn that the activity means fresh food.

Since eating and digesting feed can cause heat within your birds, avoid stimulating birds to consume feed when environmental temperatures become excessive or when birds show signs of heat stress. Research shows that what birds do eat during heat stress periods is poorly utilized for growth and development. During extreme heat, encourage birds to eat in the evening or early morning hours.

Excellent high protein game bird/turkey starter feeds are available and recommended for both broilers and turkeys for the entire grow-out period. For broilers, slowly add corn chops up to one-third of the ration for the last 10 to 14 days before the show. For turkeys, slowly add corn chops up to one-third ration for 18 to 21 days before the show. While commercial turkey and broiler feeds are ideal for industry production, they are designed to produce the most meat in an economical manner. Since the goal of raising birds for competition is to maximize the performance of the very best birds and not the entire flock, commercial diets may not be the best choice.

A feed containing a coccidiostat (medication for the control and prevention of coccidiosis) is recommended, particularly if birds are grown on litter. A growth enhancer, such as probiotics and antibiotics, in the feed also helps birds reach their best performance by optimizing nutrient absorption and preventing the development of disease-causing microbes in the digestive tract. The use of steroids is prohibited

**Table 2. Nutrient Values<sup>1</sup> of Four Commercially Available Game Bird/Turkey Starter Feeds and a Diet Formulated at the University of Arkansas**

Nutrient	U of A Diet	Brand A	Brand B	Brand C <sup>2</sup>	Brand D
Protein, Crude minimum %	27.66	30.00	30.00	28.0	30.00
Crude Fat, minimum %	8.133	3.0	2.50	3.0	2.50
Crude Fiber, maximum %	2.095	3.50	6.00	6.00	6.50
Calcium, minimum %	1.28	1.25	NA	1.00	NA
Calcium, maximum %	1.377	1.75	NA	1.5	NA
Phosphorus, minimum %	0.872	0.900	NA	1.0	NA
Sodium, minimum %	0.210	0.250	NA	0.08	NA
Sodium, maximum %	0.213	0.750	NA	0.15	NA
Methionine, minimum %	0.50	0.50	NA	--	NA
Lysine, minimum %	1.68	1.70	NA	--	NA
Coccidiostat (Coban) gram/ton	60	--	--	--	--
Coccidiostat (Amprolium) %	--	--	0.0125	--	--
Bacitracin Methylene Disalicylate gram/ton	50	200	50	--	--

<sup>1</sup>Information is calculated values supplied by feed manufacturer.

<sup>2</sup>Also contains a dried extracted streptomyces fermentation soluble.

by law. In addition, research shows no growth benefits in modern broilers and turkeys. **WARNING: Never give turkeys feed containing the coccidiostats Sacox or Biocox.** Both these coccidiostats are commonly found in commercial broiler diets and can cause severe health problems and/or death in turkeys. Several game bird type feeds were evaluated as show turkey diets. Table 2 gives a nutrient comparison of the feeds, and Table 3 shows the average weight by week for turkey hens fed the diets in a feeding trial conducted at the University of Arkansas.

While certain water soluble medications or vitamins can be used, the use of medicated feeds minimizes the day-to-day preparations necessary to maintain drug activity in water soluble preparations. In addition, following label directions carefully when using any medication is crucial. The old adage "if a little is good, then a lot should be great" **never** applies to medications. If water soluble medications are used, discard the leftover water daily to prevent growth of bacteria and algae in the water container. Some medications should be changed out twice daily. This is particularly true of vitamin and sugar preparations. Scrubbing and disinfecting water containers with a mild chlorine rinse (2 tablespoons of bleach/gallon of water) also discourages bacterial and algal growth. Be sure that the residual chlorine is completely rinsed off prior to refilling the water container.

**Table 3. Weight and Feed Consumption Estimates for Female Broilers**

Age (Days)	Weight (lb)	Cumulative Feed Consumed (lb)
7	.35	.25
14	.89	.92
21	1.71	2.15
28	2.78	3.87
35	3.95	6.04
42	5.03	8.50
49	5.96	11.10

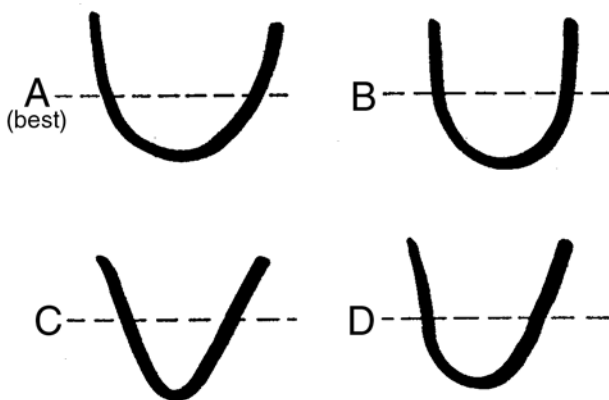
Using enclosed water systems, such as nipple drinkers, has saved labor and prevented the spread of numerous water-borne diseases within the poultry industry. However, nipple waterers are not recommended for competition birds because they may force the birds to work harder to get a drink. Under normal conditions, birds drink 2 pounds of water for every pound of feed eaten, so limiting water intake will likely decrease feed intake which will, in turn, decrease growth.

While exercise programs help firm muscle in beef and lambs, there is little evidence that exercise for broilers and turkeys enhances muscle growth particularly in the breast. Genetic selection is the factor responsible for increasing the breast meat size. Forcing birds to walk up ramps or raising the waterers and feeders above back height will not increase the size of the breast. Feeding the best birds so that all of their nutritional needs are met, encouraging the birds to eat often and providing the birds with an environment conducive for growth enhance bird growth more than exercise. Feeders and waterers should be raised as the birds grow. Just below back height is a good target for both.

## Selection

The largest, heaviest birds with the most breast meat are generally judged best in competition. Defects, such as crooked legs, wounds or broken bones, disqualify birds. Keel bones, which are generally examined early in the judging process, should be straight and long. Breast shape should be as close to a rectangle as possible along the entire length of the keel bone. To determine the breast width and depth, place your palm on the breast bone, thumb on one side of the breast, fingers on the other, then slide your hand up and down, grasping the breast to determine the amount of total meat. The more the breast resembles a “U” the better. (See Figure 1.) The biggest, fastest growing birds at the beginning of the grow cycle may turn out to be males, so always have more than seven or eight potential show birds. Do not wash birds during grow-out or prior to show to minimize risk of injury.

Figure 1.



Closely associated with final selection of show birds is culling birds during the grow-out procedure. Birds that become ill or develop leg deformities will never be show quality. The best policy is to remove the birds from the flock to prevent them from jeopardizing the health of the entire flock. They can become a source of disease for the remaining birds

and may jeopardize the health of the entire flock. Removing a few sick birds is more humane than allowing all the birds to become ill.

## Transporting to Show

When the final selection for the show has been made, the last step is choosing a safe container for transporting the birds to the show. Pet crates or large cardboard boxes with new bedding material are ideal. Should your trip to the show grounds take more than two or three hours, place ice cubes in a small container so birds will have access to water during transport. Also, choose a container that will allow birds to remain cool.

## Record Keeping

While record keeping may seem, at times, like so much busy work, the records you keep provide a basis on which to make decisions regarding your birds. Better records mean better decisions. In addition, documenting management procedures this year can mean that you improve the management of your birds next year.

Each participant should keep a daily diary about their poultry production experience. This diary should include documentation of facility particulars, high and low pen temperatures, humidity, feed consumption, weight gains, bird contact hours and a record of bird health.

## High and Low Pen Temperatures

Thermometers are available for recording the highest and lowest temperatures occurring in the pen. Collecting and writing down this information daily provides information about the environment birds are subjected to when left unattended. Early detection and correction of “cool” nights or “hot stuffy afternoons” prevents heat or cold stress in birds which leads to poor performance.

## Humidity

A wet bulb thermometer or hygrometer can be made or purchased at a local poultry supply store. To make a wet bulb thermometer, snip the end off a cotton shoe string and slide it over the end of a regular thermometer. Next dip the end of the wick in a pan of water that is room temperature. Water should wick up the string and cover the bulb. Take a reading after water has covered the bulb for 15 minutes. A comparison of wet bulb and dry bulb (regular thermometer) temperatures using a psychrometric chart gives the relative humidity (RH) or the amount of moisture in the air.

## Weekly Feed Consumption

Monitoring weekly feed consumption gives information on how much feed is required to produce show birds, and it allows the measurement of feed conversion. A comparison to standard feed conversion information also sheds light on how well birds are using the feed consumed and if feed wastage is excessive. Be careful when handling birds to minimize damage to birds.

## Weekly Weight Gains

Measuring weight gain on a weekly basis provides accurate information on bird progress. By comparing weight gains to documented growth data, poor performance can be quickly detected and corrected. Growth monitoring should also include a cull plan so birds that begin to fall behind in performance are removed. This will reduce the competition for food among the remaining birds, and it may also remove a potential disease threat. The average weights and feed tool consumption estimates in Table 3 can be used to predict performance

## Record of Bird Contact Hours

A daily log of time of visits and the duration of the visit or chores can provide an accurate measurement of the amount of work involved in caring for the birds. Generally, the more time spent with the birds, the greater the understanding of the

needs of the birds and, in turn, the better the performance of the birds.

## Record of Bird Health

Observations should be made daily to monitor bird health. Any symptoms or lesions such as lack of appetite, eye or nasal discharges, abnormal respiratory sounds (repeated coughing or sneezing), huddling, diarrhea, etc., should be recorded and veterinary advice obtained. In addition, the environmental conditions at the time of observing the symptoms should be recorded. This information helps alert you to potential problems in future flocks and is useful for the diagnosis and treatment of disease problems in the current flock. Veterinary information concerning poultry health can be obtained from your local veterinarian, the Cooperative Extension Service Division of Agriculture specialists or your county agent.

Document the use of water soluble vitamins and/or other medications. This record helps you keep track of the treatments applied to your birds.

## Conclusion

Raising broilers and turkeys for show can be a rewarding and learning experience. By planning and preparing a proper environment, selecting a good diet and then following through with consistent care and documentation, the contestant will be on the right track for producing a grand champion bird.

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