

Critical Control Points During Brooding

The management during the first few weeks of a poult's life will determine whether it will reach its full potential. While it is true that well doing flocks can be jeopardized at any stage during production, flocks which have gotten off to a poor start will never "catch up" or demonstrate compensatory growth by market age. We are very familiar with average daily gains and their importance but rarely do we stop to translate that into average hourly gains. We need to think about what this means. Every hour or day that the poult's environment is compromised and does not provide what the poult requires when it requires it, represents a lost production opportunity which the grower has already paid for.

Many different kinds of stressors are present within the environment of a commercial turkey. The one most often overlooked is that of growth itself. When asked when the stress of growth is the greatest, most producers will reply that it is around 15 weeks of age, because this is the time that the increasing body weight is easily visualized. Although it is correct that the birds are putting on the maximum amount of body mass in the shortest time, the tom poult is actually growing the most rapidly at 3 weeks of age. It is at this time, that the percent increase in metabolic weight (body weight raised to the .67 power) is the greatest.

It is because poult's are growing so rapidly that they are very susceptible to the adverse effects of mismanagement, (poor air, litter and water quality), poor feed quality and disease challenges. In addition, even minor inadequacies will be reflected in decreased growth and performance at this time. This is why the first 3 weeks of a poult's life are crucial to its future performance and why every effort must be made to maximize their potential before it is lost. Optimizing the poult's environment at this time is one of the best investments a producer can make.

In this presentation, I would like to focus on the critical control points (CCP) during brooding. I think of CCP's as strategic factors which if implemented correctly will result in a healthy, vigorous, uniform flock with feed conversions and average daily gains which meet or exceed standard. In short: CCPs are elements of a best management program to ensure a quality flock. They should be documented and measurable in order to determine whether they have been followed correctly.

They will include:

- Barn Preparation for Poult Arrival
- Poult Quality Assessment
- Brooding Temperatures
- Barn Ventilation

Feed and Water Availability and Quality

Anyone who has brooded poult's or has trained someone else on how to do it knows that it is as much of an art as a science. Each flock can be different from the one before and good husbandry skills are necessary to be able to evaluate the behavior of the poult's and determine what it is they require. It should always be remembered that the bird can not change its environment, it can only react to it. It is important to recognize that 1 to 5 % of every flock will be hard to start and will require additional care and management above what the rest of the flock requires. Compared to chicks all poult's would be regarded as being difficult to start. One question, that is often asked if whether poult's today are more difficult to brood that they were 10 years ago. Genetics are often implicated and certainly the turkey has changed, but we have to also recognize that our management methods have as well, often to save labor. It's not that the practice wasn't working, it's that in many cases we no longer can afford the time to do it. In short, changes made are usually for people not for the poult's.

If you expect the best (positive attitude) and anticipate the worst then you'll be prepared to brood even the most difficult poult's with good results. Let's examine the 5 critical control points given earlier and how we might audit them.

Barn Preparation for Poult Arrival

Brooding poults begins long before the poults reach the farm. It actually starts the day when the last group of poults left that barn.

Cleaning and Disinfection

Day old poults are very susceptible to low levels of disease causing organisms (bacteria, mold, viruses) . For this reason it is critical that the barn environment has been cleaned and disinfected well. Areas that are often overlooked include : entry rooms, waterlines and drinkers, feedlines, electrical panels and exhaust fan hoods. Periodically the barn should be swabbed after disinfection to ensure that the procedure and product used are effective. The barn should be visually inspected every time with deficiencies noted and corrected prior to setting up for the poults. It is important that farm offices, storage sheds, workshops and other such areas are also cleaned and disinfected on a regularly scheduled basis. Make sure that drinkers have been rinsed well. Disinfectant residue may make the poults back off from the water or some types can irritate the poults mouth and esophagus causing chemical burns.

Once the barn has been disinfected, treat it as a biosecure area. Wear clean coveralls, boots and bonnets while setting up. Do not bring any equipment into the barn without disinfecting it first.

Vector Control

Rodent and insect control are critical during the clean out procedure. It is well documented that darkling beetles can carry E. coli , Salmonella and a variety of viruses. They also destroy insulation making it more difficult to control the temperature in the barn.

Brooder Stoves

Make sure that all the stoves are working properly well in advance. Ensure that they are burning cleanly otherwise carbon monoxide will be produced. In cold weather, start warming the barn up 24 hours in advance, in warm weather 6 hours.

Poult Quality Assessment

At best poult quality is still very much a subjective assessment. Talking about poult quality isn't helpful unless everyone is talking about the same thing. The chicken broiler industry has used a standardized chick quality assessment rating which includes physical and microbiological tests. The physical test evaluates 10 traits : weight, appearance, legs, hocks, toes, eyes, beak trimming, vent, navel and hydration. The assessment involves pulling ten chicks at random, grading them in the 10 categories and compiling their score with a potential of 100.

Some ratings are weighted heavier than others. For example, 3 chicks with abnormal navels would affect the flocks overall score more adversely than 3 chicks with crooked toes.

The microbiological test involves 10 chicks. A yolk swab is collected and streaked on a general purpose media, a coliform media and a staph media. Yolk swabs are also cultured for salmonella. If the cultured yolk sacs from 10 birds are negative the micro score would be 100. Again a weighted system would reduce the score of positive cultures.

The overall score is the average of the physical and microbiological tests. In the broiler industry, the system has proven to be reasonably accurate in correlating 7 day mortality and final flock performance with chick quality scores.

It is important to assess the quality of each hatch you receive. They may be different due to the following factors:

- age of breeder flock
- hatchery profile
- first egg poults
- hatchery sanitation
- breeder nutrition
- age of egg at set
- heat stress
- egg handling, storage and sanitation

The hatchery requires feedback (both positive and negative) from the farm regarding poult quality and early mortality in order to make any necessary changes or investigate underlying causes .

When poults arrive you should check a representative sample for the following :

- Dehydration
- Skin over the leg should not be tight
- The blood vessel on the inside of the leg should not be standing out and prominent
- The skin should move freely over the keel
- Birds should not “hit” the drinkers

Dehydration can be a major factor in mortality during the first 3 days at the farm. Good hatchery managers will pull the hatch at a time appropriate for the majority of poults and will strive to have a poults hatch over the shortest time possible.

Navels

- Should be closed and dry. Open navels are an invitation for bacteria to enter.
- Adomen should not feel mushy when you pick up the poult. This may indicate a navel infection.

It is important to observe the behavior of the poults in order to determine what they need. I have seen poults which arrived at the farm both chilled and thirsty. The poults climbed into the drinkers, got soaked and then had no energy to move under the brooder stoves. The farm manager acted by removing some of the drinkers and physically moving the poults under the stoves until they dried out. Then she gave the poults access to the drinkers again. It was a lot of work but she certainly saved a number of poults by doing this.

Brooding Temperatures

One of the critical factors in managing the poult's environment is the correct temperature in the barn and under the stove. A poult's behavior will tell you whether it is comfortable or not but you must provide that poult with the opportunity to show you what it needs. There should be a temperature gradient between the center of the ring and the edge. A useful piece of equipment is an infrared temperature gun. It allows you to quickly check temperatures and make adjustments. One of the quickest ways to dehydrate poults is to have the temperature too high. Small poults and those from first eggs are most susceptible to the effects of overheating (dehydration and flip-overs).

Litter temperature is critical, not air temperature. A day old poult is about 10cm in height. The temperature of the air within 10 cm of the floor is determined by the temperature of the litter. In barns that are not properly preheated it is not uncommon to find that the temperature of the floor is 5 degrees or more colder than the temperature of the air less than a meter above the floor. Even in the best of barns, floor temperature is usually 2 degrees below air temperature. Poults can lose a significant amount of heat through their feet when they sit on cold litter. So even though the barn may feel hot, the birds may be cold because people and thermostats sense air temperature several feet off the floor and the birds are sensing floor temperature. In addition, damp litter is colder than dry litter.

A good indicator if the barn is properly heated is to check the temperature of the poult's feet. Place the poult's feet against your neck as it is more sensitive than your hands which are thicker skinned. You will be surprised how cold a poult's feet can be and how it will correlate with their activity.

Barn Ventilation

Air exchange is vital to bring in oxygen and remove carbon dioxide, moisture and to reduce air-borne disease organisms. Poults need fresh air from the moment they are placed in the barn. When air quality is good poults will be active and will seek out feed and water. High levels of carbon dioxide in barns have been shown to impair the poults ability to convert glycogen into glucose. Glucose is required by the brain to function. Consequently, these poults appear dopey and may lie on their sides paddling. Inadequate ventilation may also cause roundheart.

Above all, if the barn environment is not comfortable for you to work in then it must be compromising the poults who will spend 24 hours a day, 7 days a week in there.

Feed and Water Availability and Quality

Feeders and drinkers should be strategically placed within the ring such that every poult will be able to eat and drink within its particular comfort zone. There should be 2 different types of feeders and drinkers available and each should be easily accessible. Poults should be presented with good quality fresh feed. There should be no traces of the feed from the previous flock in the feedlines. Sprinkling grit or skim milk powder will often attract poults to the feeders.

Many times brooder rings will contain twice as many feeders as drinkers. It should be remembered that poults require water first then feed. Within every placement there is likely to be a few dehydrated birds so ensure that there are adequate numbers of drinkers. Poults must have access to clean, fresh water at all times. There must not be anything added to water that will cause the poults to back off drinking it. Drinkers and the water itself must be sanitized as poults are susceptible to very low levels of bacteria. The highest rates of contamination occur in slow moving water in a warm environment, which are the conditions in a brooder house. You should be checking the level of sanitizer in the end drinkers in the barn to ensure that the correct level is present.

Turkey Poults and Change

Turkeys, like many people do not like change and do not adjust to it well. This is especially true if the change is a dramatic one or if several things change at the same time. Ensure that poults are eating and drinking well before you remove the extra feed trays and waterers. Then to minimize stress, do this gradually. Don't remove them all at once.

Conclusions

A systematic and efficient management program is essential to successful turkey production. A quality flock does not happen by chance or by itself. It requires a concerted effort with attention to the critical control points on a daily basis. When poults arrive at the farm they are have gone through considerable stress from servicing, handling and the hatching process itself. Producers who are willing to put in the extra effort will be rewarded by better performance.

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info.hybrid@hendrix-genetics.com
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