



MANAGING AVIARY SYSTEMS TO ACHIEVE OPTIMAL RESULTS.

TOPICS:

Housing system
System design
Minimization of stress
Lighting
Ventilation
Feed run times
Feed placement
Watering

Water placement
Perch
Scratch material
Litter management
Management
Vaccinations
Bird hospital



NATURA PRIMUS



NATURA 60



Big Dutchman.
Innovation Breeds Success

SITUATION

In just the past 5 years, cage free layer production has almost doubled in the United States. Consumers are eating more and more cage free eggs, and most of the new cage free production is coming from aviary type systems. These aviary systems allow farmers to utilize the vertical space in a given building, which would otherwise be wasted. This system benefits the flock owner as well as the flock. The flock owners are able to house more birds in the same building footprint, while the vertical layout gives the house flock the ability to go up in the system, which is part of their natural instinct, and this system more closely resembles their natural environment. Additionally, there are more hiding spots and cover, and they have the ability to roost up in the system where they feel safer. **This results in better use of the entire house for the flock owner, and a calmer healthier flock.**

With the rising demand for cage free eggs, egg companies have been adding cage free egg production to their line of products with little thought to how the baby chick was raised. There is a tremendous amount of knowledge in the egg industry on cage production, and management of these types of systems has been top notch for many years. Cage free, on the other hand, has really just begun in the U.S. and Canada on a larger scale, and as an industry we have come a long way in understanding cage free management. Cage free flock management is paying attention to all the variables, and I can tell you that almost every management topic is different between cage and cage free production.

I have been in the poultry business for twenty years, with the last six years with a focus on cage free egg production, during which I've had the opportunity to travel to many farms with the sole purpose of watching flocks. Please keep in mind that every farm, system, breed, and flock is different. I could go on and on about the differences, as well as what works for one manager, and not for another. The best way to find a solution to a problem is to sit on a five gallon bucket, and watch your flock's behaviors and tendencies. I have had the opportunity to do just that on many farms in the U.S., Canada and Europe.



My goal for this writing is to offer some knowledge to the industry on raising a healthy aviary cage free pullet, as well as a productive aviary layer.

**Bill Snow, Big Dutchman, Inc
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Specialist**

HOUSING SYSTEM - RAISING A BETTER PULLET



Because many issues that you see from a bird welfare standpoint begin in the pullet house, I would like to start by talking about pullet rearing.

Six years ago, cage free layers in the U.S. were, for the most part, reared on the floor or in cages. This method was fine because cage free layers were typically housed in systems with a nest down the center of the house with slatted areas on each side of the nest, and scratch areas on both sides of the house. We call this a horizontal system with slats over a manure pit. This required assuring that the birds were getting back up on the slats from the litter aisles because birds were not trained to jump in the pullet house.

Typically these styles of systems housed flocks anywhere from 500 to 20,000 birds depending on the building size. As the consumer demand for cage free eggs grew, more companies responded by increasing cage free egg production. During this time, the system design changed from horizontal to vertical. Vertical systems, or aviaries, became more the standard in order to utilize building space, and also created an environment which gives the flock the option to move up into the system to roost, which is natural for the hen to do. However, pullets being raised on the floor or cage did not do well when going into an aviary system where vertical movement was needed to reach the nest, water, and feed, resulting in mis-laid eggs and a higher level of mortality. **Today, companies try to match rearing systems with the aviary layer systems.**

The very first thing you must ask yourself in planning for an aviary rearing system is, “What type of system will my pullets be going into during egg production?” The rearing system we’ll discuss here is one that has been used for the last 9 years, and one I have worked with for the last 6 years, the NATURA PRIMUS.

To start the young chicks, we place them in the middle tier of the system where they have access to perching, watering, and feed, which you will see birds using on the first day. The system is designed to be opened in stages as the birds age, gradually introducing the birds to larger groups. After the system is completely opened, all tiers of the system are accessible to the birds with the utilization of perches outside of the system, which closely match what the birds will use in the layer house. **The closer the rearing system matches the layer system, the less stress that will be on the birds when they are moved to the layer house.**

“You can fix problems in a layer house, but normally to get to the root of the problem, you must look at how your pullets are raised.”



SYSTEM DESIGN

As an equipment company we are responsible for developing systems for housing egg laying hens. The better the system design, the better the welfare of the hen, which results in increased egg production. The good thing about egg production is that the better you take care of the flock directly results in improved egg production. System design is the start of everything, and it's not enough to just meet certifier recommendations. Anybody can create a system to house egg laying hens, but the key is knowing how well the system works in regards to hen husbandry. If you get this right, everything else is much easier for the hen, and the flock manager.



Vertical aviaries offer higher levels of space in addition to perches. Elevated perch is good, but higher levels of space that also provide perches is even better. Hens in aviary systems are able to escape the size of the flock by going to different levels of the system which are hidden from aggressors. The elevated perch in horizontal systems is important, but in aviaries space with perch is provided at every level of the system, keeping the flock calm and secure.

MINIMIZING STRESS

In cage free production it is easy for birds to become stressed, and the size of the flock is a significant factor. There is a hierarchy with hens, and they need an environment where they feel safe, not only from predators, but also from each other. This sounds distressing, but is the nature of egg laying hens. I think a lot of this is a result of the hen's strong desire to forage, as though they are thinking, *"I am going to find something that you do not have"*. I'm not suggesting I know what birds are thinking, but I do spend a lot of time with flocks with the sole purpose of studying their actions.

There are dominant birds, and less dominant birds. In cage free production this is something that must be managed to minimize stress on the flock.

There are guidelines in the industry which limit group size, but these are mostly generic in order to cover all cage free production, but if the system design is correct, group size isn't as much of an issue.



Usually group size is controlled by partitioning the length of the barn to separate bird groups. In some systems you must consider group sizes, but group size is only one factor in creating the ideal cage free environment. Ventilation, building style, lighting, system type, and flock breed all play a crucially important part in group size. Aviary systems better match what birds need or seek. Horizontal systems with perching for the flock is good, but aviaries create an environment which provide cover and height, and where dominant birds are more content, thus creating a calmer flock.

BACK TO SYSTEM DESIGN

Certainly there are other variables to a well run cage free operation, but system design is one of the biggest because a well designed system allows easier and more effective management.

Big Dutchman sells many different types of cage free systems, and we have been in the cage free equipment business for 31 years. Cage free is relatively new in the U.S. and Canada, but we have had years to perfect our systems overseas where the cage free market is more mature. **Our goal as a company is to build the best system possible for the hens.**

"What we have found to be more difficult in Europe and in the U.S. is developing a system that is specifically designed from a bird welfare standpoint, and matching that system to people's perception of what that system should look like."

SHARING THE GOOD OF BOTH SYSTEMS

I do not want to get into a discussion of cage vs cage free, but I would like to point out that there is some good in both types of egg production systems.

I will start with cage production. The industry, I feel, has taken some of the good that has been learned from cage free production, and incorporated it into a better housing system to replace cage production with what we know today as colony housing, or enriched systems. The cage free industry has also taken the good of what the belt battery systems had to offer. Some examples are; manure belt systems to remove litter from the barn, manure drying systems to dry the manure, aisle ways for flock inspection, feed troughs outside of the system which remain cleaner and free of manure, and egg belts outside of the system to keep eggs clean.



We made a list of concerns with cage free production as it relates to the systems we have to offer the industry. The areas of concern were:

- ✓ Litter management
- ✓ Feed and water placement
- ✓ Perch placement
- ✓ Access to litter aisles
- ✓ Control of flock
- ✓ Flock migration
- ✓ Mis-laid eggs
- ✓ Flock management
- ✓ Stress
- ✓ Mortality

There are more variables such as lighting, ventilation, house design, area of operation, and flock breed, all of which are considered.

We looked at all of these in the development of the NATURA60 system, with the goal of building a system that addressed all of these important parts of cage free production.

NATURA60

The NATURA60 system is revolutionary in that it takes the best of what cage and cage free systems offer to the industry, and then improves every aspect.



When building design, ventilation, lighting, pullet rearing, management practices, layer system design, and all the other elements are integrated to work together, **optimum bird husbandry can be achieved with cage free production.**

LITTER

One of the biggest areas of concern with cage free is the management of litter on the floor. The scratch material in cage free operations is the manure on the floor, which needs to be very dry. The better the quality of the manure, the more birds will use this area for dust bathing. The manure also provides a foraging area for the hens which aids in less stress for the flock.



This area is opened up to the flock every day in the NATURA60. We also have the ability to keep this area free of birds at night, which gives the manure a chance to dry without the obstruction of the birds on the floor, raising the quality of the manure.

The ability to keep the flock out of this area also means less build up of manure on the floor, resulting in almost no floor laid eggs, less time spent picking up eggs from the floor, and more time to focus on managing the flock.

FEED AND WATER



Feed and water placement in cage free systems has a direct correlation with eggs laid in the nest as well as the welfare of the hen. In the NATURA60 system we paid particular attention to feed and water placement. Because the feed is in with the flock in all cage free systems, manure becomes mixed with the feed and is ingested by the birds as they naturally forage.

The goal is for the feed to be as clean and dry as possible so that the feed system has a longer life. Movement is crucial for a healthy flock, and the placement of feed and water are crucially important for optimum flock movement within the system. If feed and water is in high areas of the system, flock movement is reduced and areas are created where birds just stay put, increasing the chances of system eggs as well as increased management effort. **The NATURA60's water and feed placement are strategically placed to promote flock movement.**

PERCH

The perch is significant in the development of the hen as well as in reducing the stress of the flock. You want a system that provides a perch at a high level, or more importantly, a feeling of being very high. In the NATURA60, the birds are able to perch in high levels of the system without the ability to jump down from those levels. This is very important at night when light levels in the house are darkening, and visibility is reduced. With the NATURA60, there are perches at every level to give the entire flock space to roost, regardless of hierarchy, so birds are less prone to injury when going to their roost at night.

With systems that are designed for improved flock movement, and if proper feed schedules are utilized, you will see reduced bird aggression and less use of perch during the day. Perches are used for vertical movement by the flock, for roosting at night, and also serve as a security blanket for the flock.

During the daytime, you want birds to be moving around the system and not roosting on the perches all the time. Properly designed aviary systems promote movement during the daytime, allowing birds to move away from aggression, which provides an environment with lower stress, improved nest utilization, and possibly better keel bone development.

At night is when you want the flock to use the perches. With access to every level of the system, there is enough perch space for 100% of the flock to roost on a perch, resulting in a well rested and content flock.



Perching in rearing system



Perching in NATURA60 system

"The birds are moving around in the system free from stress and not worried about bird aggression."

ACCESS



In the NATURA60 system, every bird in the system has the opportunity to reach the litter aisles, but only at the lowest level. This results in less mortality due to bone breaks that are caused by birds jumping from high levels of the system. This design is particularly important when it comes to the end of the day when birds are re-entering the system as it prevents birds from flying off of high levels to get to their roost. It is much like you and I; we enter our dwelling from the front door at the ground level.

FLOCK CONTROL



With the NATURA60, we have the ability to lock the flock inside the system during the familiarization phase. In each section of the system when birds are placed, they adapt to their feeding, watering, nesting and roosting area in a much smaller bird group. This results in a less stressed flock, and less competition. We can also control the flock from entering the litter aisles if management is required to improve litter quality. Additionally, the ability of locking them in allows us to easily administer vaccination if needed, and to create a hospital like area for birds which are sick or hurt. To aid in recovery, you can lock them in a system away from the rest of the flock, while still providing them with the ability to move to different levels. This gives the hen the opportunity to survive in a less competitive environment. These management practices will result in fewer system eggs and nearly zero floor eggs.

MIGRATION



The ability to lock the birds into each individual section of system creates an environment of less bird migration. Now this only works if you are also keeping your house lighting and ventilation as uniform as possible. Moreover, having the ability to lock the birds in gives a sense of more space, feed, water, nest, perch, etc. due to smaller bird groups.

MIS-LAID EGGS



Mis-laid eggs in the NATURA60, which are under 2 percent, come out to a protected egg tray. Though this feature has a negative perception because it resembles a cage system, it's actually a benefit to the system. The fact is, the NATURA60 has 98% percent nest acceptance, and the system egg trays are only for protecting the mis-laid eggs. Managers still need to work the inspection aisles to collect system eggs, but from this access area it is much easier to gather the mis-laid eggs, which makes system management much easier.

MANAGEMENT

Flock management is what makes the NATURA60 really stand out. The system has litter aisles for bird access, and inspection aisles for the workers to inspect the flock and the equipment.

The litter aisles are used by the management in the morning during the nesting period to inspect the litter and the flock, and the inspection aisles are used when the flock is released everyday to the aisles. **I always say that the easier the system is to manage, the more management will actually be performed, which is beneficial to both the flock and the workers.**

Many problems that arise in flock management are a result of feed, feed schedules, how much feed, etc..., and management is different between cage free and cage flocks. In cage systems all there is for the flock to do is eat and drink. The egg will always end up on the egg belt. It's much easier to manage the flock in regards to feed. Changes can be made to management and you do not always see a big change in flock behavior. Bird groups are much smaller in cages, but in cage free systems the group size is much larger and the egg can be laid anywhere in the house. Not enough feed can add stress to a flock and cause competition, which leads to bird aggression and a flock that's not uniform, resulting in mortality and mis-laid eggs. Too much feed leads to waste and very large eggs that are not as marketable in the stores.

The goal with cage free is to give the hens a feeling of peace when it comes to feed, and there should be feed available at all times to the hen in cage free production. You want to create an environment of *"I am not concerned about feed, when I am hungry I will walk over and get something to eat"*. The situation is the same as it is with us. If you were unable to eat a meal or unsure when you were going to be able to eat, then there would be an increase in stress. Likewise with a cage free flock. Overall stress and aggression is reduced once a bird learns that she is provided with food anytime she wants. This is a big topic I know and changes depending on many variables.

Talk with a cage free specialist when making guidelines for optimum bird husbandry in regards to feed or changes to management practices. Adapting and changing for bird husbandry is good, but you need to know all the variables when making that change.

If bird welfare is the goal, then selecting a system that gives your flock the greatest opportunity for optimum performance, while making management easy and effective, needs to take priority.

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