Aviagen® Turkeys

Bulletin

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Broody Control for Turkey Breeding Hens

Introduction

The Nicholas and B.U.T. turkeys on farms today have been selected by the Geneticist at Aviagen Turkeys for a range of balanced traits over many generations. This balanced selection approach has steadily improved the performance of our birds. As a result, our parent stock hens have become noticeably less broody in recent years. However, broodiness can still impact egg production and it is important to understand what causes it, how to prevent it, and what to do when it happens.

What is Broodiness?

Turkeys by nature generate offspring by laying a "clutch" of 10-15 eggs and then ceasing production. The hen then has a natural tendency to sit on the eggs until they hatch.

The desire of the hen to incubate her eggs, also known as the "onset of broodiness", is caused by the increased production of the hormone prolactin. Prolactin levels increase gradually over a period of four to five days before the end of a clutch of eggs. In order to keep hens in production, steps must be taken to prevent broodiness.

Identifying Broody Hens / Broodiness Progression

It is critical to recognize the symptoms of broodiness. Following is a list of some of the more common behavioral and physical indicators of broodiness:

- It is more difficult to move hens off the nests. They may puff up, hiss and want to fight with the person pushing them off the nest.
- Lay pattern shifts toward the end of the day.
- Number of hens on the nest at the end of the day increases.
- Feed consumption declines; flock becomes less active.
- Egg production declines.
- A tendon forms between the pubic bones pulling the bones closer together.
- The oviduct has become smaller and paler; Figure 1 below shows the progression of the oviduct leading to broodiness.

Figure 1. Normal Hen Oviduct and Broodiness Progression Leading to drier oviduct

Good Oviduct	Onset of Broodiness	Broody	Out of Production
Larger in size, pink in color, easy to open	Smaller and less moist	Dryer, smaller, redness around the outer edge, more difficult to open	Very small oviduct
			

If any of these symptoms are present, it is critical to identify these hens for broody treatment.

Discouraging Broodiness

In the wild, if a hen loses her eggs due to predators, weather, or other factors she will lay more eggs. In a turkey barn, we keep hens in production by removing eggs after they are laid and not allowing hens to sit in the nests. Therefore, the first step in discouraging broodiness is to ensure hens are laying in the nests (see Table 1).

It is also important to identify and eliminate factors that can encourage hens to become broody. These include:

1. Floor Layers
2. Allowing hens to sit on the eggs too long due to insufficient frequency of egg collections
3. Allowing hens to sit on nests overnight
4. Poor functioning and / or maintenance of the nests
5. Starting broody control too late
6. Poor uniformity of the flock
7. Hot Weather

See Table 2 for a troubleshooting guide to address issues that can indicate or lead to broodiness.

Table 1

Training Hens to Use the Nest

1. Train hens to use the nests as soon as they start egg production.
2. Tie nest gates open before the hens arrive and leave them in the open position until hens start to lay eggs. Once in production place a few gates every day in the normal operating position.
3. Pick up hens nesting on the floor and put them into a nest, or side-switch hens that are nesting on the floor.
4. With automatic nests, place shavings or straw in the nests and dim the lights in the nest area to encourage the hens to use the nests.
5. Initially start with 2 to 4 egg collections a day. Then gradually increase daily collections so that by the end of the second week the hens are on the normal egg collection schedule.
6. With automatic nests, collect eggs by hand the first few times, then begin automatic collections. Consult the automatic nest manufacturer for additional information.

Table 2

Troubleshooting Factors That Can Lead to Broodiness

Hens laying or nesting on floor

- Begin training hens to the nest when they are placed in the lay barn. Pick up any hens nesting on the floor and place them in the nests or side switch them.
- The hens may be having difficulties entering the nest. Improve nest access by ensuring nest gates are working properly, nest ramps are at the right height and not too steep, there is adequate nest litter and there is an adequate nest opening.
- There may not be enough nests for the hens. Five hens per nest is recommended.
- Eliminate dark areas in the house. 12 foot candles of light spread evenly throughout the house is recommended.
- Evaluate areas where floor eggs are found and discourage nesting. Eliminate empty, sharp, 90-degree corners; round them off or place a nest there.
- Walk the floor frequently to move the hens, and pick up any floor eggs.
- Switch sides on potential floor broodies or run them through the broody program.

High percentage of eggs laid on the floor at night

- Collect eggs frequently - at least every 45-60 minutes.
- Begin training hens to the nest when they are placed in the lay barn. Pick up any hens nesting on the floor and place them in the nests or side switch them.
- The hens may be having difficulties entering the nest. Improve nest access by ensuring nest gates are working properly, nest ramps are at the right height and not too steep, there is adequate nest litter and there is an adequate nest opening.
- Open nests earlier or close nests later.
- Eliminate light entering main pen from the broody pens or other source.

Hens staying on the nests for an extended period

- Collect eggs frequently - at least every 45-60 minutes.
- Push hens off the nests and away to allow other hens access.

High number of hens in nests at end of the day

- Side switch late layers.
- Turn lights on earlier.

Multiple hens on a single nest

- Ensure nest gates are in working order.
- Ensure there are enough nests for the hens. Five hens per nest is recommended.

Hot weather

- Ensure fans, cool cells, misters, foggers are working properly.
- Ensure wind speed of 600 ft (183 m) per minute.
- Consider feeding a high density diet.
- Flush water lines to keep cool water flowing to the birds.
- Consider using electolytes.
- Avoid activity in the heat of the day. For Example, delay insemination until cooler hours of the evening or morning.

When to Start the Broody Control

Successful broody control is all about proper timing. Starting too early can reduce peak production. Starting too late can result in a larger than normal dip in egg production caused by broodiness.

In most flocks, the broody program should be initiated just after the peak in egg production. If production declines 3 days in a row for no apparent reason start the broody program on the fourth day. If production declines 3 days in a row but there is an insemination, feed change, vaccination, bird move or other stress on the flock during those 3 days, then wait until there are three stress-free days of decline before initiating the broody program.

Which Broody Control Option to Use?

There are many broody programs in the turkey industry. When implementing a broody program, it is crucial that the program is one the farm personnel will carry out as needed.

The best broody control program will identify and treat the broody hens without affecting the non-broody hens. These programs are often more complicated and time consuming than those that treat all hens in the house at the same time. If the farm personnel don't have time to implement the program the result will be worse than using a simpler program that is executed at the appropriate time.

Following are several broody control options ranging from simple to complicated. It is up to the farm management and crew to determine which program gives the best results under their conditions.

Broody Control Options

1) Paint and Pull Program

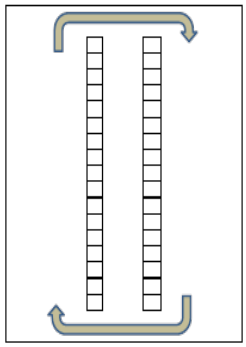
The "paint and pull" method of identifying broody hens is a simple to implement method based off the behavioral changes listed previously. It is an easy to use program and reduces the chances of missing hens because of inexperienced labor.

To use the "paint and pull" method, mix food coloring into a garden sprayer or a plastic spray bottle. Be sure not to dilute the solution too much because it has to stay on the bird throughout the day.

After the first morning egg collection, allow the hens 20 minutes to return to the nests. Then begin spraying the backs of the hens. We recommend that a different color be used each day. A color chart should be set up so everyone on the farm knows what color is being used for that day. The next day switch to another color. After the last collection of the day, wait 20 minutes for the hens to get back on the nest. Any hen with the color of that day must be pulled off the nest for broody treatment.

2) Side-switching or Pen Switching

Figure 2: Side Switch

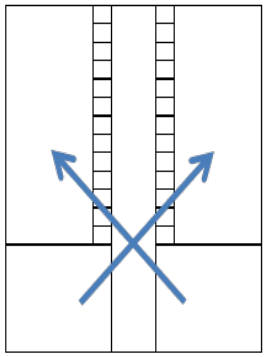


Side-switching (also called pen-switching) is often used in barns where floor space is at a premium. It is also an easy system to manage. There are no dedicated broody pens. This option requires at least two main production pens. In most cases the house is divided in half with nests down the middle (see Figure 2). Hens in the left pen are moved to the pen on the right, and the hens in the right pen are moved to the pen on the left. After the first side-switch this process can be carried out when needed or weekly during insemination.

Side-switching is easy to do but it affects all hens, even the non-broody hens. It is not unusual to see a small drop in production for 1 or 2 days after which production recovers. Side-switching can also be an effective method for treating floor layers.

3) Pulling Late Layers

Figure 3: Pulling Late Layers



After the last collection, any hens that return to the nest within 20 minutes should be moved to the broody pen (see Figure 3). The next day check the broody pens at every collection; any hens that squat should be returned to their original pen. At the end of the day, hens that are still in the broody pen should be moved to the production pen opposite their original pen.

A simpler variation of pulling late layers is immediate side-switching. In this scenario there are no broody pens. Instead, the late layers are directly side-switched instead of being moved into broody pens.

Note: *Ensure that all broody pens have adequate floor space for the number of hens being run through them. Also, birds must have plenty of feed, water and good ventilation at all times. Depriving hens of these necessities could cause them to go completely out of production. Do not allow your broody treatment area to become an animal welfare issue.*

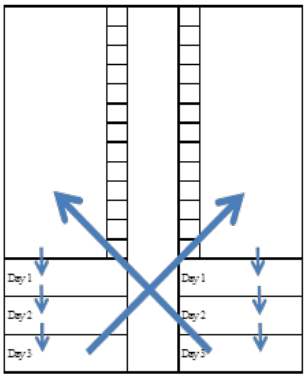
4) Three-Day Broody Program

Day 1:
Once potentially broody hens are identified, pull them off the nest and place them in the first pen (see Figure 4). This pen should be environmentally different from the production pens by using a different litter material: sand, dirt or gravel. Leave hens in this first pen for a full 24 hours before moving them to the second pen. Walk the broody pens during every collection to keep the birds moving. Any hens that squat should be returned to the main pen.

Day 2:
Move hens from the Day-1 pen to the second pen after the last collection of the day and before pulling hens from the nests that evening (see Figure 4). Litter in this pen should be different from Day-1 pen. This can be achieved by using sawdust or sand on the floor.

Leave hens in the Day-2 pen for a full 24 hours before moving them to the third pen. Walk the broody pens during every collection to keep the birds moving. Any hens that squat should be returned to a main production pen.

Figure 4: Three-Day Broody Program



Day 3:
Move hens from the Day-2 pen to the third pen after last collection of the day (see Figure 4). The environment should be different from the Day-2 pen (shavings can be used as litter).

Walk through the broody pens during every egg collection to keep the birds moving. Any hens that squat can be returned to the main pen.

After the hens have been in Day-3 pen for 24 hours, and after removing all the squatters, it may be useful to check the remaining hens for the effectiveness of the broody treatment. One way to do this is to evert and observe the oviduct, which should be moist and enlarged. Another way is to measure the distance between the pubic bones. If you can place three fingers between the bones, the hen is ready to return to the main production pen. If the hen does not break, she can be put through the broody cycle again or removed from flock.

5) Phase Lighting

Phase lighting, involves increasing the photo period **by four hours for one day only**. Phase lighting is best used as a supplement to the regular broody control program. It can be done on an insemination day.

On insemination day, if the lights normally come on at 4:00 a.m., set the time clock so that the lights come on at midnight. This is four hours of additional light. Phase lighting does two things: 1) It helps keep production at a high point, and 2) It tends to shift the birds from laying later in the afternoon to earlier in the morning.

Do not forget to return the time clocks to their regular time the next day after the phase lighting.

6) 24 Hours of Light in the Broody Pen

In this option the broody hens are kept in the broody pen for 24 hours during which time they are exposed to continuous light. Do not expose the hens to 24 hours of light for more than one day. Long term exposure to constant light can cause serious production problems. This procedure should only be used if the broody pen lighting does not affect the normal production areas.

Controlling Floor Broodies

Broody hens can be found not only in the nest but also on the floor in the main production pens. Because these hens make their nests on the floor, they are called "floor broodies". **The best cure for floor broodies is prevention**. When the hens are moved to the lay barn, begin training them to come to the nests. Using a nest litter different from the floor litter and tying the nest gates open will aid in enticing hens to the nests.

Figure 5: Walk the floor picking up floor eggs and moving the hens at each egg gathering.

When collecting eggs walk the floor area and if any hens appear to be nesting on the floor, move them around or put them in the nests. Once egg production begins, walk the floor picking up floor eggs and moving the hens at each egg gathering (see Figure 5). Brightening up the floor area, removing dark areas and rounding out corners or blocking the hens' access to corners will also help in reducing floor broodies.

Occasionally floor broodies will occur in large numbers. In this situation they should be identified by spraying them with food coloring. When the hens are inseminated, they can be pulled out and pen-switched or put into the broody program.

Additional Considerations

- Frequent collection of the eggs will also reduce broodiness. Eggs should be collected every 45-60 minutes to prevent the hen from sitting on the nest for long periods. When collecting eggs, all the hens should be pushed at least 3 feet (1 meter) away from the nest. This will deter the potential broody hen from returning quickly to the nest. This also gives another hen the opportunity to enter the nest and lay her egg.

- Egg gatherers can have a large impact on broodiness. It is up to them to identify potential broodies and to identify factors that encourage broodiness. They should take corrective action before a serious problem occurs. Not sure if this was a standalone point.

- Another consideration is to use Table 3: "**Tracking Broodiness"**. Count the number of hens on the nest at the second to last collection. A steady increase in the number of hens on the nest over a period of 3 to 4 days can serve as an indication that adjustments need to be made to the broody program.

Table 3: Tracking Broodiness

Broody Hen Counts

Farm: _____ Barn: _____

Flock: _____ # Hens: _____

Start Date:

Week	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							

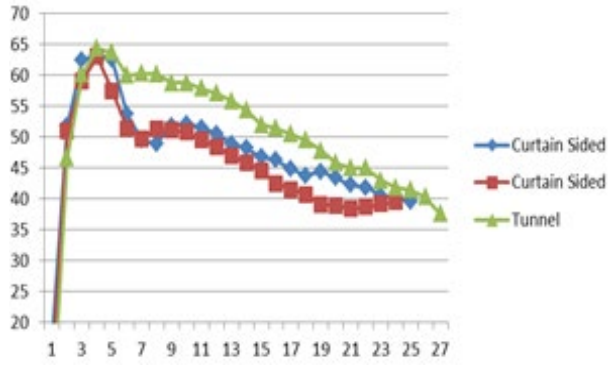
- Pulling broody hens out of the back of the nest can be a difficult chore for the farm crew and a stress on the hens. Pulling broodies should be done in a way that does not harm the hens. It may be simpler for the farm staff, and easier on the hens, to use nets in front of the nests allowing broodies to be pulled from nest fronts (see Figure 6).

- It is also helpful to train the inseminator to identify and pull out potential broody hens during insemination (see Figure 1).

Figure 6: Nets in front of the nests allowing broodies to be pulled from front nests.

Broodiness and Hot Weather

Figure 7: Hot Weather Egg Production- US May Lit Flocks



Broody problems tend to be more severe in warmer climates. Broodiness should not be confused with heat stress. Hens that start production in very hot weather tend to peak well then go out of production quickly. Figure 7, shows production from three sister flocks. They were raised on the same brood/grow farm then split into three different lay farms. One farm was a tunnel-ventilated, cool-celled farm. The other two farms had curtain-sided barns with hanging fans and foggers. In 24 weeks of egg production the tunnel-ventilated farm produced 86 eggs per hen compared to 76 and 80 eggs for the two curtain-sided farms.

Good power ventilation and cooling systems help hens to stay in production during hot weather. Ensure all fans are in working condition, belts are tightened, and fans are kept free of dust and minimize obstructions which may reduce air-flow. Further suggestions are listed in Table 2 under hot weather troubleshooting.

Summary

At Aviagen Turkeys, we know that one program does not fit all situations. Broody programs that work well in one area or climate might not be the best in another. The hen “personality” is different with every flock and "Trial and Success" seems to be the only way for each farm or company to define their best program. We are dedicated to working with our customers to help design broody control programs that enable them to produce the lowest cost egg. Please contact your Aviagen Turkeys rep if you feel we can help with your situation.

Visit www.aviagenturkeys.us for a complete library of technical publications.

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