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bird migration...

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in tunnel-ventilated broiler houses

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Many broiler producers have reported a tendency for birds to migrate toward the inlet end of tunnel-ventilated houses. As more and more birds migrate, the ratio between the birds and feeder-drinker space is increased. This makes it more difficult for the birds to obtain necessary feed and water, leading to a decrease in production performance. In addition, crowding has been reported by some companies to result in an increased level of condemnations at the processing plant. The increased condemnations are thought to be caused by scratches obtained from birds climbing over one another or breast blisters due to birds sitting in wet litter next to evaporative cooling pads.

The precise cause of bird migration has not been determined. There are primarily three different theories: natural tendency, differences in air velocity and differences in air temperature. Broilers appear to have a natural tendency to face into a breeze. This tendency can be seen on hot days when birds crowd in front of circulation fans. Birds will tend to orient themselves so that they are facing the fan. A bird is rarely seen facing directly away from a fan. There has been some speculation that the reason broilers tend to face into a breeze may be related to the fact that they are descended from birds that once flew. Takeoffs are of course easier when done into the wind. Because of this tendency to face into the wind there would be an increased probability that when a bird walks it will walk into the wind. If this theory is proven true, there is probably little producers can do to stop migration short of putting up retaining fences.

The natural tendency of the birds to walk toward the front of the house may be aggravated by large temperature differences between the front and rear of the house. As birds become heat stressed they begin to search out a cool place to rest during the hot part of the day. The heat stressed bird in the back of the house may move toward the front of the house searching for relief from the heat.

Large temperature differences are often the result of not enough fan capacity or holes in the ceiling and sidewalls. To minimize temperature differences, clean exhaust fan shutters and check that the belts are tight so each fan is pulling as much air as possible. Look for holes in the tri-ply where heated attic air (greater than 130°F) may be entering the house. Consult with a ventilation specialist to see if you have enough exhaust fans.

If the house is using fogging nozzles for cooling, the number of nozzles in the back of the house can be increased to offset the increase in air temperature. It is important that the fogging nozzles are not placed within 60' to 80' of the exhaust fans because the moisture will cause dust to collect on the shutters at a very rapid rate.

Migration may also be the result of bird crowding in the vicinity of the inlet. In tunnel-ventilated houses without evaporative cooling pads, air entering through openings in the front of the house is often moving faster than the air moving down the house. In heat stress situations birds may have a tendency to move toward the inlets to increase the amount of cooling they are receiving much like they move toward circulation fans in a naturally-ventilated house. As the birds in the first 100 feet or so of the house move closer to the inlet, the birds further down the house move into the space vacated by the birds in the front of them. This process continues down the length of the house resulting in a flow of birds toward the front of the house.

To minimize this problem it is important that the speed of the air entering the house is about the same as the air moving down the house. This is accomplished by making sure that the amount of opening in the front of the house is equal to the cross-sectional area of the house. The typical 40' wide house has a cross-sectional area of about 400 square feet. This means that during tunnel ventilation 400 square feet of opening is needed in the front of the house. This can be provided by 50' of 4' curtain opened in the front on both sides of the house.

Bird migration is a serious disadvantage to tunnel ventilation and unfortunately the problem is not well enough understood as of yet to completely solve. Nevertheless, by insuring that fan capacity and air inlet size are sufficient, that ceilings and side walls are tight and that fogging and evaporative pad equipment are designed and used properly the severity of the problem can be minimized.

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