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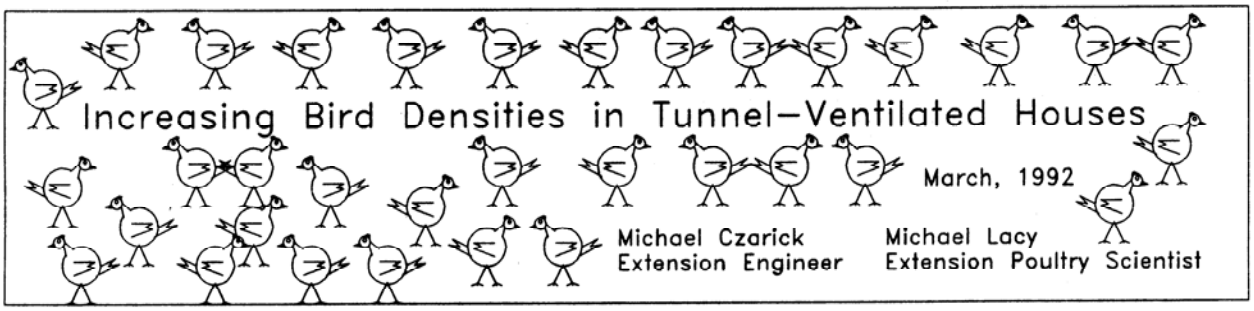


Converting a conventional house to tunnel ventilation can be an expensive proposition. Exhaust fans need to be purchased, installed, and wired. The fogging system will require upgrading, the house tightened and migration fences installed. The cost associated with all these changes can exceed $5,000 per house. If evaporative cooling pads are desired, the cost increases further with the purchase of pads, sump tanks, water distribution system and the construction of a structure to hold the pads.

The questions many growers find themselves asking are: Is it worth it? Will I make enough money to pay for the switch to tunnel ventilation and still realize a decent profit? These are not easy questions to answer. Better weight gains and feed conversions will of course increase a grower's income and help cover some of the costs of a retrofit. But, is there an additional way to increase the payback on tunnel ventilation. One obvious possiblility is to increase the number of birds placed in tunnel-ventilated houses. Traditionally, summertime bird densities have had to be decreased to minimize heat stress problems. Considering the cooling ability of tunnel-ventilated houses, the question has been raised as to whether or not birds can be placed at or near wintertime densities during the warm summer months without losing the performance benefits associated with tunnel ventilation. If both performance and bird densities can be increased, the cost effectiveness of converting a house to tunnel ventilation will be improved.

Last summer a study was conducted by Extension Engineers and Poultry Scientists to examine the question of placing birds at typical wintertime densities in a tunnel-ventilated house. The study took place on a commercial broiler farm just outside of Athens, Ga. The farm had two tunnel-ventilated houses and one conventional, mixing fan, ventilated house. Birds in the tunnel-ventilated houses were placed at a density of 0.72 ft^2/bird, while those in the conventional house were placed at 0.78 ft^2/bird. The same breeder flocks were used in both the houses. House temperatures, humidity, electricity and water usage were monitored.

Each house was treated as a separate farm by the poultry company. The amount of feed delivered to the bins for each house was kept separate. The birds were caught separately and average bird weights, feed conversions, and level of condemnations were determined at the processing plant. The grower's payment received for each house was also figured separately.

House Information

	Tunnel Ventilation	Curtain Ventilation
House construction	34' X 400', curtain	34' X 400', curtain
Ceiling	drop ceiling, R = 12	drop ceiling, R = 12
Number of fans	seven 48" (21,000 cfm)	eleven 36", (10,000 cfm)
Fogging pressure	180 psi	100 psi
Fogging nozzles	108, 1 gal./hr.	60 2 gal./hr.

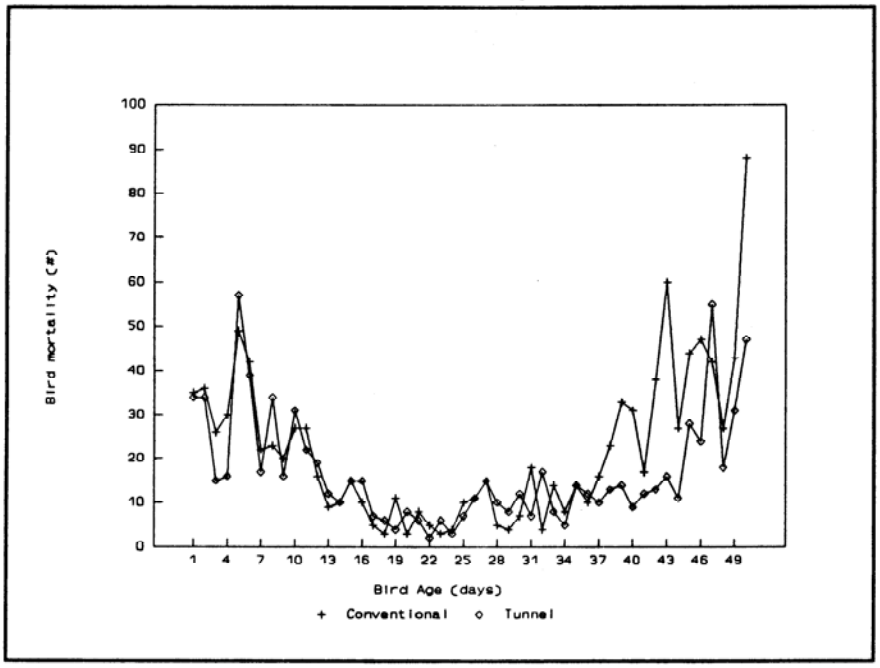
Production Information

	Tunnel Ventilation	Curtain Ventilation
Date placed	June 19, 1991	June 19, 1991
Number placed	19,000 (0.72 ft^2/bird)	17,400 (0.78 ft^2/bird)
Mortality	4.5%	6.3%
Weight	5.05 lbs.	4.81 lbs.
Feed conversion	1.99 lbs feed/lb. gain	2.06 lbs. feed/lb. gain
Condemnations	0.65%	1.35%
Electricity	$295	$214
Condemnations	0.65%	1.35%
Grower payment	$4098	$3028

The tunnel-ventilated house provided significantly improved daytime and nighttime house environment. The misting system in the tunnel-ventilated house reduced average house temperature by as much as 7°F, while the misting system in the conventional house reduced average air temperature by a maximum of 3.5°F. The increased cooling system efficiency and greater air movement (wind chill effect) resulted in the effective house temperature being approximately 20°F cooler than outside temperature during the day and 10°F cooler at night.

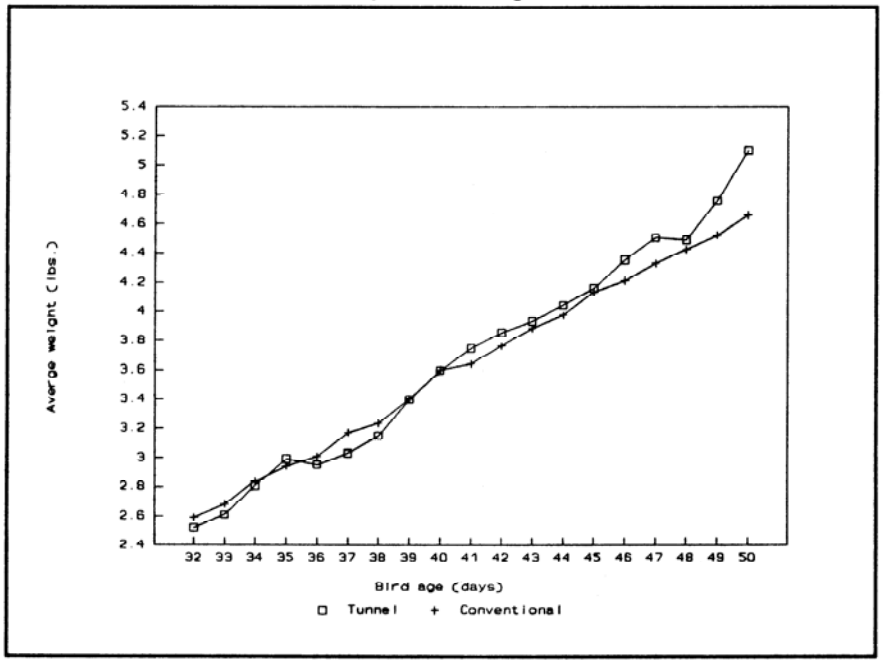
The improved environment in the tunnel-ventilated house led to better bird performance. Over the course of the growout, mortality was significantly lower in the tunnel-ventilated house. As one might expect, the difference in the level of mortality was related to the level of heat stress to which the birds were exposed. During the first four weeks, when conditions in both houses were favorable, there was little difference in mortality between the two houses. But, during the sixth and seventh weeks, as heat stress problems worsened in the conventional house, the tunnel-ventilated house had a 46% and 68% lower mortality, respectively.

Bird Mortality



A similar trend was seen in the difference in the weights of the birds in the two houses. Bird scales indicated that the birds in the two houses weighed approximately the same until the sixth week . At this point the birds in the tunnel-ventilated houses began to put on more weight. As the birds got older, more separation in weights was observed between the two houses.

Daily Bird Weights



Though grower pay for this particular growout was much greater for the tunnel-ventilated house, it must be emphasized that this was not always the case. During the milder growouts last summer the differences in grower payment was often less than $500 after paying the electricity bills. Bottom line, the hotter the weather, the greater the difference.

Placing birds at higher densities during the summer months, whether in a tunnel-ventilated house or a conventional house, requires a higher level of management to be successful. Even with ideal management, performance will probably be slightly lower with higher densities. There is always that trade off between individual bird weights and total pounds produced. As with anything else, density at which birds are placed in tunnel-ventilated houses to obtain optimum return for both the grower and the company will vary from operation to operation.

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