



The University of Georgia Cooperative Extension Service

College of Agricultural and Environmental Sciences / Athens, Georgia 30602-4356

Tunnel vs. Conventional

By: *Michael Czarick*
Extension Engineer

Michael Lacy
Extension Poultry Scientist

AUGUST 1990



Should I convert my broiler houses over to tunnel ventilation? This is a question that many broiler producers have on their minds. To convert an existing house to tunnel ventilation may cost anywhere between three and six thousand dollars. Once converted, it may cost twice as much to operate as compared to a conventional curtain-sided house with mixing fans. All of this has to be balanced with the possibility of increasing weight gain and significantly reducing mortality during extremely hot weather.

To help broiler producers with this decision, Extension Engineers and Poultry Scientists have been examining the possible benefits and costs associated with tunnel ventilation. The study has been taking place on a commercial broiler farm just outside of Athens, Ga. The farm has three, 36' X 400' curtain-sided houses. Two of the houses were converted to tunnel ventilation, while the third was left unchanged.

	<u>House #1</u>	<u>House #2</u>	<u>House #3</u>
House construction	curtain-sided	curtain-sided	curtain-sided
Ceiling construction	drop ceiling	drop ceiling	drop ceiling
Ventilation system	tunnel ventilation*	natural ventilation	tunnel ventilation*
Number of fans	two-48", ten-36"	eleven-36" fans	seven-48" fans
Fogging pressure	200 psi	100 psi	200 psi
Number of nozzles	108	40	108
Nozzle size	1 gal./hr.	1 and 2 gal./hr.	1 gal./hr.
Temperature reduction	5°F-10°F	1°F-3°F	5°F-10°F

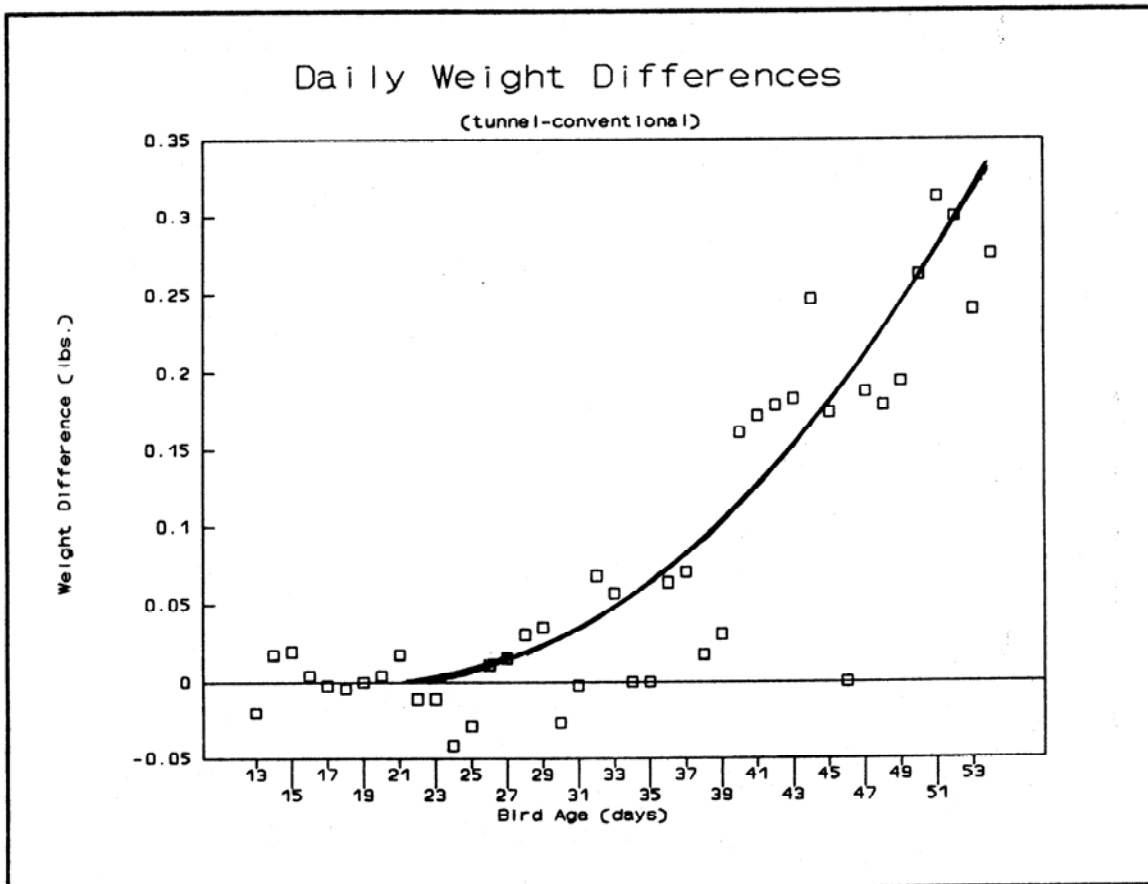
*House #1 and #3 were curtain-ventilated the first three weeks of production.

The farm has recently completed its first long-term, warm-weather grow-out. Though the definitive answer on the cost effectiveness of tunnel ventilation has not been found, a significant amount of valuable information has been gathered.

PUTTING KNOWLEDGE TO WORK

Significant differences in performances between the tunnel-ventilated houses and the conventional curtain-sided house were found. Birds in the tunnel-ventilated houses weighed more and had a slightly better feed conversion. There were no large differences in mortality, probably the result of outdoor temperatures staying below 90°F for most of the last few weeks of the grow-out.

	<u>House #1</u> (tunnel)	<u>House #2</u> (conventional)	<u>House #3</u> (tunnel)
Date placed	June 14, 1990	June 14, 1990	June 14, 1990
Number placed	17,500	17,500	17,500
Mortality	527	533	533
Weight	5.35	5.13	5.36
Feed conversion	2.033	2.050	2.033
Condemnations	1.08	0.68	0.75



Problems associated with bird migration were kept to a minimum by the installation of two, 18" high fences in the tunnel-ventilated houses. One fence was placed 100' from the end of the house while the other was placed in the middle of the house. Birds still had a slight tendency to migrate within each fenced off area.

The cooling system performed well throughout the grow-out. The fogging nozzles produced 5°F to 10°F cooling depending on outdoor temperature and humidity. Air temperatures within the tunnel-ventilated houses were fairly uniform with the rear of the houses typically running a few degrees cooler than the front of the houses. Bird wetting was not a problem except on rainy, overcast days when the foggers were inadvertently left on.

The additional cooling provided in the tunnel-ventilated houses did not come without cost. Electricity usage and water usage were nearly double in the tunnel-ventilated houses. Though electricity and water usage will typically run higher in a tunnel-ventilated house, due to the increased number of fans and foggers, they could have been reduced by changes in management.

	<u>House #1</u> (tunnel)	<u>House #2</u> (conventional)	<u>House #3</u> (tunnel)
Electricity Usage:			
Maximum (24 hours)	\$12.48	\$8.64	\$10.56
Total	\$313.68	\$158.40	\$288.16
Maximum Daily Water Usage:			
Birds	1400 gal.	1310 gal.	1390 gal.
Foggers	1260 gal.	--*	1280 gal.
*was not measured			

In this particular grow-out the producer did clear an extra couple of hundred dollars in the tunnel-ventilated houses in spite of the higher electricity costs. If the birds would have been subjected to a few days in the mid to high nineties the last week or two of the grow-out, differences in mortality could have affected profits substantially. But, on the other hand, if the temperatures had stayed in the mid to low eighties, there certainly would have been less of an effect.