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Maximizing Bird Cooling in Tunnel Ventilated Houses

Reprinted from "Poultry Housing Tips" published by The University of Georgia Cooperative Extension Services,
College of Agricultural and Environmental Science, Athens, GA

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This summer started out hot and has only gotten worse. Tunnel ventilation has proven to be very effective in keeping birds cool during hot weather but will only do so if they are maintained and operated properly. The following tips should help you maximize cooling in your tunnel-ventilated houses:

1) Make sure you install at least three migration fences by three weeks of age. When birds pack in at the pad end of the house, bird performance will be harmed due to insufficient feeder space and increased heat stress. Cool air coming in through evaporative pads cannot move between the crowded birds.

2) Starting the fifth week, clean shutters weekly. Dirty shutters can reduce the air moving capacity of a fan by 30%. A 30% reduction in wind speed can result in a 50% decrease in wind-chill effect!

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Broiler Performance Data (Region) Live Production Cost					
	SW	Midwest	Southeast	Mid-Atlantic	S-Central
Feed cost/ton w/o color (\$)	185.48	187.74	192.69	189.42	192.50
Feed cost/lb meat (¢)	18.30	16.00	18.02	19.16	18.46
Days to 4.6 lbs	43	41	42	43	42
Chick cost/lb (¢)	3.58	5.00	4.19	3.73	3.80
Vac-Med cost/lb (¢)	0.06	0.08	0.11	0.24	0.07
WB & 1/2 parts condem. cost/lb	0.21	0.23	0.15	0.23	0.11
% mortality	4.99	2.20	4.09	7.08	3.75
Sq. Ft. @ placement	0.87	0.74	0.81	0.85	0.86
Lbs./Sq. Ft.	7.19	6.01	7.33	7.75	7.01
Down time (days)	12	9	14	10	13

Data for week ending May 29, 2004

3) Check fan belts. Are they riding high in the motor pulley? If the belt is riding below the top of the motor pulley, the air moving capacity of the fan can be reduced by as much as 20%!

4) If the birds have been heat stressed during the day, make sure you run all of your fans all night long. Studies have shown that cooling birds off at night can increase weights by 20 points or more.

5) Make sure that the side wall curtains are held tightly against the side wall. Air leaking around side wall curtains will dilute the cold air entering through evaporative cooling pads resulting in large temperature differences between the pad and fan ends of a house. Air leakage in houses with evaporative cooling pads has been shown to increase air temperature within the house by three degrees or more.

6) Do not use all of your tunnel fans on small birds. It does not improve bird performance and wastes electricity. Use fogging pads on young birds to temper the air, if temperatures rise significantly above your desired set points.

7) If you use fogging pads, make sure that the nozzles are wetting the entire pad. Many pads are dry along the top because the top line of fogging nozzles are placed too low. To maximize pad wetting, and therefore cooling, the top line of nozzles should be placed within one foot of the top of the fogging pad.

8) Make sure that when the tunnel curtain opens it does not restrict air flow through the evaporative cooling pads. When the tunnel curtains hang down in front of evaporative cooling pads, the cooling produced by the pads is reduced and static pressure is increased. This situation reduces the air moving capacity of the fans.

9) If you have a controller, do not operate the tunnel fans off the average of all temperature sensors in the house. At night as temperatures decrease, the temperature at the inlet end of the house decreases while the temperature of the air at the fan end of the house decreases. The average remains the same. By operating the tunnel fans off the temperature sensor nearest the tunnel fans, more fans will run at night and bird cooling will be maximized.

10) If you have a tunnel ventilated house with fogging pads, make sure that your water pressure is at least 180 - 220 psi is preferable. The higher water pressure will result in smaller water droplet size which will maximize air temperature reduction while at the same time keeping house wetting to minimum.

11) If you have fogging pads, make sure you have between 40 and 60 one gallon per hour nozzles inside the house to increase cooling on extremely hot days. The nozzles should be installed in four to six lines running across the house. Two lines should be placed in the brooding end of the house while the other two to four should be placed in the nonbrooding (tunnel fan end of the house). Do not place fogging nozzles within 125' of the tunnel fans. Do not turn on interior nozzles until air temperature within the house exceeds 87° F. Turning on the nozzles before this point will lead to house and equipment wetting which can actually increase heat stress related problems.

12) Do not turn on evaporative cooling pads until house temperature has reached at least 80° F. During warm weather when outside air temperature is below 80° F. the relative humidity of the air is above 80%, and therefore very little evaporative cooling can take place. Running an evaporative cooling system before the air temperature has reached 80° F will increase house moisture and encourage algae growth on pads which in turn will reduce the flow of air through the pads

Broiler Whole Bird Condemnation (Region)

	SW	Mid-West	S. East	Mid-Atlantic	S. Central
% Septox	0.196	0.290	0.157	0.263	0.108
% Airsac	0.085	0.027	0.035	0.184	0.043
% I.P.	0.019	0.013	0.041	0.020	0.011
% Leukosis	0.001	0.000	0.001	0.012	0.000
% Bruise	0.007	0.001	0.001	0.003	0.002
% Other	0.007	0.012	0.003	0.006	0.011
% Total	0.314	0.343	0.237	0.493	0.175
% 1/2 parts condemnations	0.415	0.810	0.328	0.300	0.253

Data for week ending May 29, 2004

**Broiler Performance Data (Company)
Live Production Cost**

	Average Co.
Feed cost/ton w/o color (\$)	191.06
Feed cost/lb meat (¢)	18.02
Days to 4.6 lbs	42
Chick cost/lb (¢)	4.11
Vac-Med cost/lb (¢)	0.09
WB & 1/2 parts condemn. cost/lb	0.18
% mortality	4.28
Sq. Ft. @ placement	0.83
Lbs./Sq. Ft.	6.98
Down time (days)	13

Data for week ending May 29, 2004

and decrease their life.

13) Make sure you flush evaporative cooling pads with plenty of fresh water at the beginning of each growout to remove any trapped dust from the flutes. If allowed to accumulate, over time this dust will restrict air flow through the pads which leads to reduced bird cooling.

14) If you have fogging nozzles in your houses, make sure that temperature sensors and/or thermostats are protected from the fog. If the sensors/thermostats get wet, they will indicate that the air temperature is lower than it actually is which can cause exhaust fans to turn off prematurely.

Monitoring Broiler Distribution Through Water Consumption

Reprinted from "Poultry Housing Tips" published by The University of Georgia Cooperative Extension Services, College of Agricultural and Environmental Science, Athens, GA

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One of the keys in obtaining maximum bird performance in a tunnel-ventilated house is making sure the birds are uniformly distributed throughout the house. Most producers

are very good at installing migration fences to insure that the birds will not migrate toward the inlet end of the house during the growout. But, it is important to realize that just because migration fences are installed doesn't necessarily mean that bird uniformity problems are eliminated. In order to get the most out of a tunnel-ventilated house, it is crucial that migration fences are installed soon after the birds are turned out into the full house, and the birds are evenly distributed between the fenced off sections.



Uneven bird distribution affects both broiler performance and energy usage. Studies conducted at Auburn University found that increasing bird density from 0.9 to 0.8 ft² /bird, decreased birds weights from 5.88 to 5.77 lbs and feed conversions increased from 1.85 to 1.88 lbs feed/lb of gain. In the case of poorly distributed birds in a broiler house there are far more

birds being hurt by the higher densities than being helped by lower densities in less crowded areas of a house.

There are a number of different reasons for the decrease in performance. First, as density increases feed intake decreases. This is due to increased competition for feeder space reducing the time that birds can spend at feed pans. Furthermore, when birds are crowded it simply becomes more difficult for the birds to make the trip to feed and water. Decreased feed consumption may also be due in part to increased floor temperatures. As birds crowd, the amount of air moving around the bird decreases resulting in warmer air around the bird. It is not uncommon to find that air temperature at bird level in a crowded area of a house five degrees warmer than in other less crowded areas of a house. The higher air temperatures result in elevated bird body temperatures thereby, decreasing feed consumption.

Another problem with overly crowded birds at one end of a house is that condemnation levels are likely to increase as birds climb over one another to get to feeders and drinkers, resulting in scratching and bruising. In the Auburn study, a density difference as little as 1.0 to 0.9 ft² /bird increased sores and scabs from 17.1% to 26.8% indicating the importance of keeping the birds uniformly distributed throughout the house.

Increased bird densities at the tunnel curtain end of a house can aggravate poor litter conditions often occurring due to the high moisture level of the air entering through evaporative cooling pads because of the difficulty in getting air down to floor level. Damp litter conditions can result in foot and hock burns, and breast blisters that will also affect carcass grading. The damp litter will also provide a better environment for microbial growth that could lead to increased infection and/or increased ammonia production. This in turn has its own implications that could have a secondary

effect on bird health.

Not only does improper bird distribution affect bird performance, but it can also have an effect on net return. Fuel and electricity costs increase when there are more birds on one end of the house than the other because there is a surplus of heat on one end of the house and a deficit on the other. During cold weather we use the heat produced by the birds to help maintain the proper house air temperature. When there are more birds on one end of the house than the other, a producer can easily create a situation where exhaust fans are coming on at one end of the house to cool it off while furnaces or brooders on the opposite end are coming on because there is not enough bird heat to maintain the proper temperature.

But, how does one know if their birds are uniformly distributed? When the fences are first installed when the birds are young it can be extremely difficult to determine if the birds are uniform. After all, the Auburn study showed that a density difference as little as 10% can reduce the weight of a seven-week-old bird by 10 points. Determining a 10% density difference can be a challenge. As birds get older it becomes easier to determine if there are more birds on one end of a house than another. The problem is that by the time you can easily see density differences the birds are too big to “herd” from one area of the house to another.

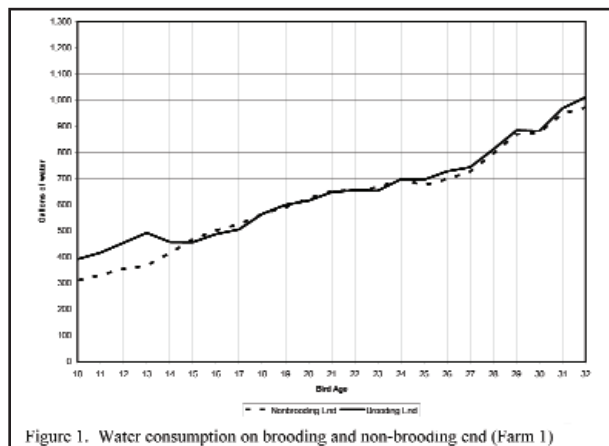


Figure 1. Water consumption on brooding and non-brooding end (Farm 1)

Probably the best way to evaluate bird density uniformity is to simply install a water meter on each end of your houses. If the house temperature is uniform, daily water consumption is an excellent and relatively inexpensive measure of bird uniformity. A producer can let his birds migrate to the non-brooding end of the house for a couple of days. Once he sees that water consumption is uniform then he knows he can install his fences. Or if the producer sees that there is 20% less

water consumption on the non-brooding end he can “herd” some birds to the rear, put up the fences, and check the water consumption over the next couple of days. If the birds are still not uniform, the fences can be temporarily dropped and the birds moved while they are still young and move freely.

Recently a trial was conducted where water meters were installed on the brooding and non-brooding ends of two broiler farms in West Georgia. The birds were placed on the same day on both farms and the water meters were connected to data loggers so that daily water usage could be monitored. Both farms had electronic environmental controllers connected to a PC so house temperatures could also be monitored.

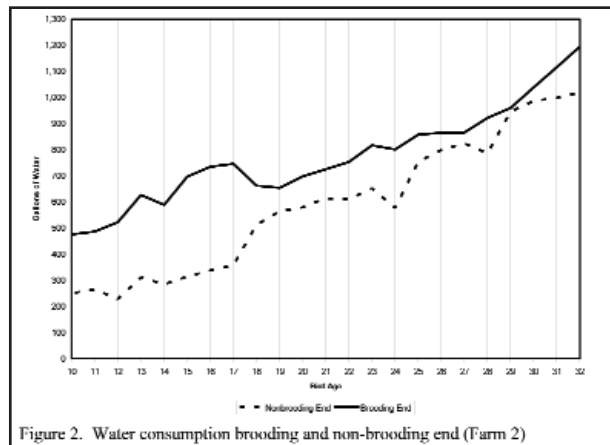
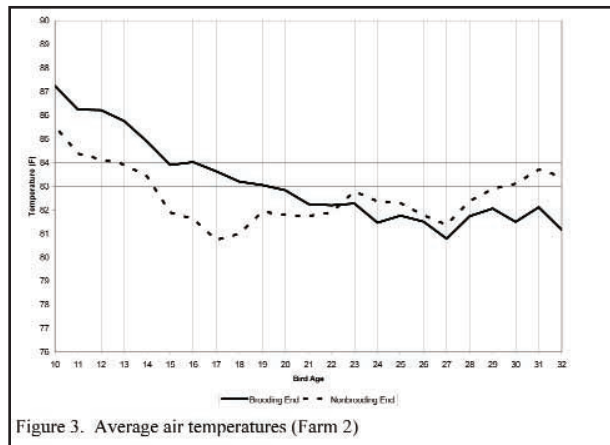


Figure 2. Water consumption brooding and non-brooding end (Farm 2)

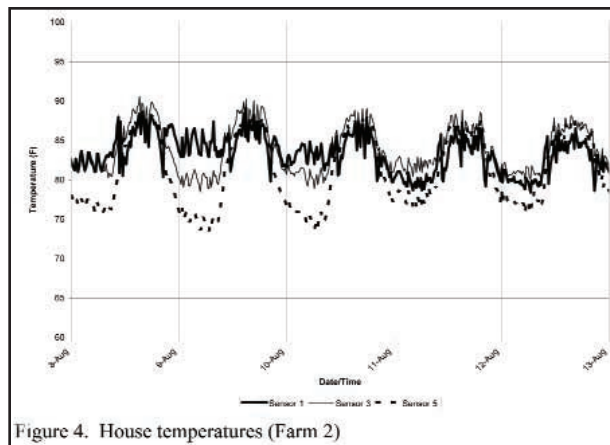
Figures 1 and 2 show the daily water consumption for both ends of one house on each farm. Due to very warm weather, birds on both farms were allowed access to the non-brooding end of the houses at approximately eight days of age. On Farm 1 the producer redistributed his birds and installed three fences when the birds were two weeks of age. After the producer turned out, there were approximately 20% more birds on the brooding end than the non-brooding end as evidenced by the fact that water usage was 20% higher on the brooding end. As the producer installed his fences he moved a few birds towards the rear of the house to get them more even. After the fences were installed there was less than a 2% difference in water consumption between the two ends, indicating the birds were very uniformly distributed. Visual observations made on the farm confirmed the fact that the birds were very uniform from end to end.

On Farm 2 though, the birds were turned out into the entire house at the same time, but the producer did not install their fences until the birds were about 19 days of age. The birds did not spread out on their own like they did on Farm 1. This may have been due to differences in light intensities on the two farms. Prior to

fence installation there were approximately twice the number of birds on the brooding end as indicated by the fact that the water usage on the brooding end was twice that of the non-brooding end. Though the producer attempted to get the birds more uniform prior to installing the fences, water consumption indicated that there were still approximately 15% to 20% more birds on the brooding end than the non-brooding end. This again was confirmed by visual observations on the farm.



The fact that there were twice the number of birds on the brooding end prior to the installation of fences can also be seen in the average daily air temperature on each end of the house during the same time period (Figures 3). Prior to fences being installed, the brooding end was approximately two degrees warmer than the non-brooding end. When the producer moved more birds to the rear of the house the difference between the two ends dropped to less than a degree. A two-degree average difference may not seem like much until you take a closer look at the actual house temperatures just prior to and after the installation of the migration fences (Figure 4).



During the day, the difference was not very large between the two ends of the house because of the warm weather and the large number of fans operating. But at night when the number of operating fans dropped the effect of the large difference in bird density becomes very apparent. On August 10, the day before the fences were installed, there was nearly a 10° F difference between Sensor 1 (located 50' from the brooding end wall) and Sensor 5 (located 75' from the tunnel fan end wall) even though the houses were operating in side wall inlet mode at night. On August 11, after the producer moved additional birds and the heat they produce to the non-brooding end and installed the migration fences the temperature difference dropped to less than 5° F at night.

It is interesting to note that the difference in water consumption between the brooding and non-brooding ends of the house on Farm 2 was not constant 20% after the birds were turned out (Figure 2). Though it is difficult to fully explain all of the variations, house temperature clearly played a role. On many of the days when the difference between the two ends of the house lessened, corresponded with hotter days when the nonbrooding end of the house was significantly warmer than the brooding end. The higher air temperatures on the nonbrooding end increased water consumption 10 to 15%, bringing the amount of water the birds on the nonbrooding end drank close to what those did on the brooding end even though there were far fewer birds on the nonbrooding end.

Overall, Farm 2 finished up well below average and Farm 1 finished above average. Although multiple factors can influence grower returns at the end of grow-out, density did have an effect in this case. Timing of migration fence placement and the subsequent effect on bird density will be monitored in future flocks. Additional work is needed to determine the influence these practices have on growth and livability. Even though more work is needed to fine tune these results, this trial demonstrates the importance of timely installation of migration fences and ensuring that broilers are distributed uniformly throughout the house.

REMINDER


All previous issues of the Poultry Informed Professional are archived on our website www.avian.uga.edu under the Online Documents and The Poultry Informed Professional links.

Broiler Whole Bird Condemnation (Company)

	Average Co.
% Septox	0.181
% Airsac	0.065
% I.P.	0.019
% Leukosis	0.001
% Bruise	0.003
% Other	0.008
% Total	0.276
% 1/2 parts condemnations	0.401

Data for week ending May 29, 2004

Dr. Stephen R. Collett
Appointed Assistant Professor



Dr. Stephen R. Collett has been appointed Assistant Professor in the University of Georgia's College of Veterinary Medicine, Department of Avian Medicine, according to an announcement by Dr. John Glisson, Avian Medicine Department Head.

In his new position Dr. Collett will work with Drs. C. Hofacre and G. Zavala in the clinical avian medicine program and teach students in the MAM program.

Prior to his appointment Dr. Collett was North American Poultry Division Director for Alltech, Inc., where he also provided technical veterinary support for worldwide poultry accounts.

Dr. Collett received his B.Sc. (Agric. Production) from the University Natal, Pietermaritzburg and a B.V.Sc. Doctor of Veterinary Medicine from the University of Pretoria Faculty of Veterinary Science, Pretoria, South Africa.

Dr. Collett has authored, co-authored and published numerous articles and has been a guest lecturer in the U.S.A. Canada, South Africa and throughout Central and South America. Collett is a Diplomate of the American College of Poultry Veterinarians and a member of the American Veterinary Medical Association and the American Association of Avian Pathologists. He is also a registered member of the Royal College of Veterinary Surgeons (MRCVS).

On the lighter side Dr. Collett was a member of the State and National Bike Team and placed 45th in the 1994 Championships in Vail, Colorado.



The University of Georgia is committed to the principle of affirmative action and shall not discriminate against otherwise qualified persons on the basis of race, color, religion, national origin, sex, age, physical or mental handicap, disability, or veteran's status in its recruitment, admissions, employment, facility and program accessibility, or services.

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Excerpts from the latest USDA National Agricultural Statistics Service (NASS) "Broiler Hatchery," "Chicken and Eggs" and "Turkey Hatchery" Reports and Economic Research Service (ERS) "Livestock, Dairy and Poultry Situation Outlook"

Broiler Eggs Set In 19 Selected States Up 1 Percent

According to the latest National Agricultural Statistics Service (NASS) reports, commercial hatcheries in the 19-State weekly program set 213 million eggs in incubators during the week ending May 22, 2004. This was up 1 percent from the eggs set the corresponding week a year earlier. Average hatchability for chicks hatched during the week was 83 percent. Average hatchability is calculated by dividing chicks hatched during the week by eggs set three weeks earlier.

Broiler Chicks Placed Up 2 Percent

Broiler growers in the 19-State weekly program placed 175 million chicks for meat production during the week ending May 22, 2004. Placements were up 2 percent from the comparable week a year earlier. Cumulative placements from December 28, 2003 through May 22, 2004 were 3.58 billion, up 2 percent from the same period a year earlier.

April Egg Production Up 2 Percent

U.S. egg production totaled 7.34 billion during April 2004, up 2 percent from last year. Production included 6.28 billion table eggs, and 1.07 billion hatching eggs, of which 1.01 billion were broiler-type and 58.0 million were egg-type. The total number of layers during April 2004 averaged 342 million, up 1 percent from a year earlier. April egg production per 100 layers was 2,148 eggs, up 1 percent from April 2003.

All layers in the U.S. on May 1, 2004, totaled 342 million, up 1 percent from a year ago. The 342 million layers consisted of 282 million layers producing table or commercial type eggs, 57.2 million layers producing broiler-type hatching eggs, and 2.49 million layers producing egg-type hatching eggs. Rate of lay per day on May 1, 2004, averaged 71.0 eggs per 100 layers, up 1 percent from a year ago.

Laying flocks in the 30 major egg producing States produced 6.85 billion eggs during April 2004, up 2 percent from a year ago. The average number of layers during April, at 319 million, was up 1 percent from a year ago.

Egg-Type Chicks Hatched Down 1 Percent

Egg-type chicks hatched during April totaled 37.5 million, down 1 percent from April 2003. Eggs in incubators totaled 34.1 million on May 1, 2004, down 3 percent from a year ago.

Domestic placements of egg-type pullet chicks for future hatchery supply flocks by leading breeders totaled 311,000 during April 2004, up 11 percent from April 2003.

Broiler Hatch Up 2 Percent

The April 2004 hatch of broiler-type chicks, at 774 million, was up 2 percent from April of the previous year. There were 661 million eggs in incubators on May 1, 2004, up 2 percent from a year earlier.

Leading breeders placed 6.4 million broiler-type pullet chicks for future domestic hatchery supply flocks during April 2004, down 5 percent from April 2003.

Turkey Eggs in Incubators on May 1 Down 1 Percent

Turkey eggs in incubators on May 1, 2004, in the United States totaled 29.7 million, down 7 percent from May 1 a year ago. Eggs in incubators were 2 percent below the April 2004 total of 30.4 million. Regional changes from the previous year were: East North Central down 8 percent, West North Central down 9 percent, North and South Atlantic down 5 percent, South Central down 8 percent, and West down 5 percent.

Poults Placed During April Down 1 Percent From Last Year

The 24.7 million poults placed during April 2004 in the United States were down 1 percent from the number placed during the same month a year ago. Placements were up 2 percent from the March 2004 total of 24.2 million. Regional changes from the previous year were: East North Central down 7 percent, West North Central up 4 percent, North and South Atlantic up 1 percent, South Central down 5 percent, and West down 15 percent.

Broiler Production Higher, Turkey Production Lower in First-Quarter 2004

According to the latest Economic Research Service (ERS) reports, U.S. broiler production totaled 8.2 billion pounds in the first quarter of 2004, up 5.3 percent from a year earlier. The increase was chiefly due to a large increase in broiler slaughter in March (up 12 percent). While both the number of birds slaughtered (up 12 percent) and the average weight (up 1 percent) increased in March, the increase was greatly boosted because March 2004 had two additional slaughter days compared with March 2003, which other factors being equal, would raise production by around 9 percent. Broiler production for the second quarter is forecast at 8.56 billion pounds, an increase of 3.5 percent from last year. During April, the daily broiler slaughter numbers reported by the Agricultural Marketing Service indicated a production increase of around 3.5 percent from the same period a year earlier. Most of the gain was from higher average bird weights. Other indicators pointing to higher future production are the weekly increases in the number of chicks placed for growout. Over the last 5 weeks (through May 1) the number of chicks being placed for growout has averaged just around 2 percent higher than in the same period in 2003. With strong prices forecast to continue through the remainder of 2004, broiler production is expected to expand again in 2005 to 35.1 billion pounds, slightly over 3 percent higher than a year earlier.

Turkey production totaled 1.3 billion pounds in first-quarter

2004, down 5.6 percent from the previous year. The situation with turkey production is the opposite from broilers, with the overall number of birds being slaughtered down and with average weights also lower. Over the last 15 months (January 2003 through March 2004) the number of poults being placed for growout has been almost continuously below the level for the same month in the previous year. Turkey production in 2004 is now estimated at 5.44 billion pounds, 3.7 percent below 2003. However, increased prices and moderating feed costs are expected to encourage producers to increase production in 2005. Production is forecast at 5.58 billion pounds, 2.4 percent higher than in 2004 and about even with production in 2001.

Broiler and Turkey Stocks Lower

Broiler stocks at the end of first-quarter 2004 were 593 million pounds, down 6.9 percent from the 636-million-pounds they were the previous year. The decline in stocks came from smaller holdings of broiler parts. At the end of the first quarter, stocks of broiler parts totaled 568 million pounds, down 7.4 percent from a year earlier. Stocks of whole birds, however, were higher at nearly 25 million pounds, up 8.1 percent from the end of first-quarter 2003. With the lower overall stocks, a strong domestic economy, and an anticipated strengthening in exports in the second quarter, broiler prices for most products are expected to remain strong.

Ending turkey stocks for the first quarter of 2003 were 515 million pounds, 6.2 percent lower than the previous year. There was a wide difference in the stock levels for whole birds and parts. Stocks of whole birds were up 10 percent from the previous year, while stocks of turkey parts totaled 254 million pounds, down 19 percent from the end of the first quarter of 2003. Stock levels for whole birds were higher at the end of the first quarter, compared with the previous year. However, wholesale prices for whole birds (toms and hens) averaged 60.6 cents per pound in the first quarter of 2004, up 2 percent. First-quarter prices for most turkey parts were considerably stronger than during the same period in 2003. For example boneless/skinless breast meat was over 40 percent higher in the first quarter, and drumsticks were up over 100 percent.

Broiler Export Forecast Lowered for 2004

The broiler export forecast for 2004 has been reduced to 4.6 billion pounds, a reduction of 355 million pounds. The reduction is the result of continued restrictions on U.S. exports to a number of countries and the export dampening effect of much stronger prices for almost all broiler products. Broiler exports during the first quarter of 2004 were 1.02 billion pounds, nearly 15 percent from the previous year. Most of the decline was due to reduced shipments to Russia, China, and Japan resulting from bans on shipments because of earlier Avian Influenza outbreaks. The decline in exports to these countries was partially offset by higher shipments to countries such as Mexico, Canada, and Turkey. Exports in 2005 are expected to strengthen, reaching 4.9 billion pounds, close to the level exported in 2003.

Egg Prices Sharply Higher

Wholesale table egg prices (NY grade A large) in the first quarter of 2004 averaged 114.8 cents a dozen, nearly 49 percent higher than last year, and 3.6 percent higher than the last quar-

ter of 2003, continuing the trend of rising prices that started in mid-2003. For all 2003, prices averaged 87.9 cents a dozen, the highest since 1996, when wholesale prices averaged 88.2 cents per dozen.

However, wholesale prices broke sharply from 122.9 cents in March to only 88.9 cents per dozen in April, partially reflecting the post-Easter price decline. The sharp price decline combined with rising feed costs (corn and soybean meal prices) has dramatically squeezed producers' returns.

In second-half 2003, egg prices and margins above feed costs rose rapidly, encouraging short-term adjustments (increased molting and delayed culling) to boost table egg production. As a result, egg production in the fourth-quarter 2003 was record high. Producers began expanding their layer flocks in response to the higher returns, as a result table egg production in the first quarter increased about 2 percent over a year ago. On April 1, 2004, U.S. egg-type layers totaled 282.8 million birds, an increase of nearly 2.2 million birds over a month earlier and the largest April inventory of egg-type layers since November 2002.

In 2004, table egg production is expected to increase about 1.7 percent due to the buildup of the laying flocks. Wholesale prices will likely average 95-100 cents per dozen, reflecting record first-quarter price and strong demand for protein foods. In 2003, prices averaged 88 cents per dozen. For 2005, wholesale table egg prices (NY grade A) are forecast to average 91-99 cents per dozen, reflecting a 1.4-percent increase in table egg production.

Likewise, retail egg prices averaged \$1.59 per dozen in the first quarter of 2004, but are forecast to decline from the record levels. For all of 2004, retail egg prices are expected to average in the mid-\$ 1.40s per dozen, which would be a record high. Retail egg prices in 2005 are expected to be about unchanged.

For all of 2004, due to the higher shell egg prices, the quantity of eggs going to the breaking market is expected to increase by nearly 2 percent above 2003. This trend will most likely continue and rise by about 1 percent in 2005, as prices are expected to stay about the same.

Total U.S. egg production in 2004, table and hatching, is expected to rise to nearly 7.39 billion dozen, or 1.6 percent, over 2003. Table eggs are expected to account for about 85 percent of total production in 2004, and likely will stay at the same percentage in 2005. Hatching egg production in 2004 is expected to rise by 1 percent, reflecting higher broiler production.

U.S. egg exports in 2004 are expected to reach 110 million dozen, down 25 percent from the previous year. The decline is mainly due to outbreaks of Avian Influenza in early 2004 and restrictions imposed by many countries on U.S. eggs and egg products. Shell eggs (for human consumption and hatching purposes) are more vulnerable to disease transmission, while processed egg products (yolks, egg albumen, dried or in liquid forms) are less likely capable of transmitting diseases. This situation will most likely last for several months, and exports are expected to rebound some in 2005.

Meetings, Seminars and Conventions

2004 June

June 23-25: Georgia Egg Association's 43rd Annual Meeting, St. Simons Island, GA. Contact: Robert Howell, Executive Director, Georgia Egg Association, 16 Forest Parkway, Forest Park, GA 30297. Phone: 404-363-7661; Fax: 404-363-7664; Email: goodeggs@bellsouth.net

2004 July

July 11-14: 7th International Mareks Disease Symposium, Oxford, UK. Contact: Dr. M. Carr, Institute of Animal Health, Compton Laboratory, Newbury RG20 7NN, UK. Phone: +44 1635 577227; Email: margaret.carr@bbsrc.ac.uk

July 13-14: Hatchery-Breeder Clinic, Wynfrey Hotel, Birmingham, Alabama USA. Contact: U.S. Poultry & Egg Association, 1530 Cooledge Road, Tucker, Georgia 30084-7303 USA, Tel: +1 770 493 9401, Fax: +1 770 493 9257, Website: www.poultryegg.org

July 24-28: AVMA/AAAP Meeting, Philadelphia, PA. Contact: <http://www.avma.org> or <http://www.aaap.info>; Email: aaap@uga.edu

July 27-30: Meat & Poultry Marination Shortcourse, Athens, Georgia USA. Contact: Marian Wendinger, University of Georgia, Extension Food Science, 240A Food Science Building, Athens, Georgia 30602 USA; Phone: +1 706 542 2574; Fax: +1 706 542 9066; Email: marainw@uga.edu, Website: www.efsonline.uga.edu

2004 August

August 1-2: Alabama Poultry & Egg Association Annual Meeting and Convention, Sandestin Beach Hilton, Sandestin, Florida USA. Contact: Alabama Poultry & Egg Association, PO Box 240, Montgomery, Alabama 36101 USA, Tel: +1 334 265 APEA, Fax: +1 334 265 0008, Website: www.alabamapoultry.org

August 25-27: XVII Central American Poultry Congress, San Pedro Sula, Honduras. See www.anavih.org for details. Contact: Email: anavih@honduras.quik.com

August 31-September 2: agriChina, Shanghai New International Expo Center, (SNIEC), Shanghai, P.R. China. Contact: K-M Luth, DLG-Agriservice GmbH, Eschborner-Landstrasse 122, 60489 Frankfurt-am-Main, Germany. Ph: +49 69 24788 257. Fax: +49 69 24788 113; www.agritechnica.de

2004 September

September 7-9, VIV China 2004, Shanghai Everbright Convention and Exhibition Center, Shanghai, P.R. China. Contact: VNU Exhibitions Europe BV, PO Box 8800, 3503 RV Utrecht, The Netherlands, Tel: +31 30 295 2772, Fax: +31 30 295 2809, Email: viv.china@vnuexhibitions.com

September 8: Delmarva Breeder, hatchery and Grow-out Conference, Delmarva convention Center, Delmar, Maryland. This is a University of Delaware meeting and not a DPI meeting. Contact: Bud Malone, University of Delaware. Phone: 302-856-7303 or email: malone@udel.edu

September 15-16: Poultry Production and Health Seminar, Memphis Marriott Downtown, Memphis, Tennessee USA. Contact: U.S. Poultry & Egg Association, 1530 Cooledge Road, Tucker, Georgia 30084-7303 USA, Tel: +1 770 493 9401; Fax: +1 770 493 9257, Website: www.poultryegg.org

September 23-24: California Poultry Federation Annual Meeting and Conference, The Lodge, Sonoma, California USA. Contact: California Poultry Federation, 3117 A McHenry Avenue, Modesto, California 95352 USA, Phone: +1 209 576 6355, Email: CalifPoultry@cs.com

September 24-26: Mississippi Poultry Association Annual Convention, Beau Rivage, Biloxi, Mississippi USA. Contact: Natalie M. Tillman, Mississippi Poultry Association, Inc., Phone: +1 601 355 0248, Fax: +1 601 353 3840, Email: mpaoffice@bellsouth.net

September 27-October 1: International Short Course in Modern Poultry Production, University of Arkansas. Contact: Frank Jones; Phone: 479-575-5443 or email: ftjones@uark.edu

2004 October

October 6-8: National Meeting on Poultry Health & Processing, Clarion Resort Fontainbleau Hotel, Ocean City, Maryland. Contact: Karen Adams, Phone: 302-856-9037 or email: adams@dpi

October 6-9: 43rd Fieravicola, Forli, Italy. Contact: Fiera di Forli, Via Punta di Ferro, 47100 Forli, Italy. Tel: +39 9543 793511; Fax: +39 0543 724488; Email: info@fieravicola.com; Website: www.fieravicola.com

October 7-8: Poultry Protein & Fat Seminar, Doubletree Hotel, Nashville, Tennessee USA. Contact: U.S. Poultry & Egg Association, 1530 Cooledge Road, Tucker, Georgia 30084-7303 USA, Phone: +1 770 493 9401, Fax: +1 770 403 9457, Website: www.poultryegg.org

2004 November

November 9-12: EuroTier 2004, Hanover, Germany. Contact: DLG (Deutsche Landwirtschafts-Gesellschaft e. V.), Eschborner-Landstrasse 122 60489 Frankfurt-am-Main, Germany. Phone: +49 69 24788 265; Fax: +49 69 24788 113; Email: eurotier@DLG-grankfurt.de

2005 January

January 26-28: 2005 International Poultry Exposition, Georgia World Congress Center, Atlanta, GA. Contact: US Poultry & Egg Assn., 1530 Cooledge Rd., Tucker, GA 30084; Phone: 770-493-9401; Fax: 770-493-9257; www.poultryegg.org

2005 February

February 6-8: National Turkey Federation Convention, Long Beach, California USA. Contact: National Turkey Federation, 1225 New York Avenue, NW, Suite 400, Washington, DC 20005 USA, Phone: +1 202 898 0100, Fax: +1 202 898 0203, Website: www.eatturkey.com

Meetings, Seminars and Conventions

2005 March

March 9-10: Nebraska Poultry Industries Annual Convention, New World Inn & Conference Center, Columbus, Nebraska. Contact: Nebraska Poultry Industries, Inc., University of Nebraska, A103 Animal Sciences, P.O. Box 830908, Lincoln, NE 68583-0908. Phone: 402-472-2051

March 15-17: Midwest Poultry Federation Convention, St. Paul, Minnesota USA. Contact: Lara Durben, Phone: +1 763 682 2171; Email: lara@midwestpoultry.com

March 16-18: VIV Asia, BITEC (Bangkok International Trade & Exhibition Centre), Bangkok, Thailand. Contact: Organisation: VNU Exhibitions Europe BV, PO Box 8800, 3503 RV Utrecht, The Netherlands. Phone: +31 30 295 2772; Fax: +31 30 295 2809; Email: viv.asia@vnuexhibitions.com; Website: www.viv.net. Visitors: NCC Management & Development Co. Ltd. 60 New Rachadapisek Road, Klongtoey, Bangkok 10110 Thailand. Phone: +66 2 229 3000; Fax: +66 2 229 3191; Email: viv@gsncc.co.th; Website: www.qsncc.co.th

March 23-26: XVII European Symposium on the Quality of Poultry Meat and the XI European Symposium on the Quality of Eggs and Egg Products, Golden Tulip Parkhotel Doorwerth, Doorwerth, The Netherlands. Contact: Dorien Kleverwal, Symposium Secretariat, Wolterinkhofstraat 39, 7437 AX Bathmen, The Netherlands. Phone: +31 570 541948; Fax: +31 570541948 or +31 55 506 4858; Email: info@eggmeat2005.nl; Website: www.eggmeat2005.nl

2005 April

April 25-27: 54th Western Poultry Disease Conference, The Fairmont Hotel Vancouver, Vancouver, BC, Canada. Contact: Dr. R.P. Chin. Email: rpchin@ucdavis.edu

2005 June

June 22-24: Georgia Egg Association's 44th Annual Meeting, St. Simons Island, GA. Contact: Robert Howell, Executive Director, Georgia Egg Association, 16 Forrest Parkway, Forest Park, GA 30297. Phone: 404-363-7661; Fax: 404-363-7664; Email: goodeggs@bellsouth.net

2005 July

July 16-20: AVMA.AAAP Meeting, Minneapolis, MN. Contact: AVMA (800) 248-2862, Ext. 268, or www.avma.org

July 16-20: 94th Annual Meeting of the Poultry Science Association, Auburn University, Auburn, Alabama. Contact: James W. Kessler, Executive Director, Poultry Science Association, 1111 North Dunlap Avenue, Savoy, IL 61874. Phone: 909-677-0069; Fax: 909-677-2420. Email: jamesk@assochnq.org

2005 August

August 22-26: 14th World Veterinary Poultry Congress & Exhibition, Istanbul, Turkey. Contact: Congress organiser: IT Consortium, Mete Cad. 16/11, 34437 Taksim, Istanbul, Turkey. Phone: +90 212 244 71 71; Fax: +90 212 244 71 81; Email: info@wvpc2005.org; Website: www.wvpc2005.org

2005 September

September 24-29: 15th European Symposium on Poultry Nutrition, Balatonfüred, Hungary. Contact: Dr K Dublecz, University of Veszprem, Georgikon Faculty of Agriculture, Hungary. Tel: +36 83 312 330; Fax: +36 83 315; Email: duplecz@georgikon.hu; Website: growcare.katki.hu/wpsa2005

2005 November

November 1-4: VIV Europe 2005, Jaarbeurs, Utrecht, The Netherlands. Contact: VNU Exhibitions Europe BV, PO Box 880. 3503 RV Utrecht, The Netherlands, Phone: +31 30 295 2772; Fax: +31 3 295 2809; Email: viv.europe@vnuexhibitions.com; Website: www.viv.net

2006 January

January 25-27: 2006 International Poultry Exposition, Georgia World Congress Center, Atlanta, Georgia USA. Contact: US Poultry & Egg Assn., 1530 Cooledge Road, Tucker, Georgia 30084 USA, Phone: +1 770 403 0401; Fax: +1 770 403 9257, Website: www.poultryegg.com

2008 August

August 10-15: XXIII World's Poultry Congress, Convention and Exhibition Centre, Brisbane, Australia.

Further information to be published later.

Broiler Performance Data (Region) Live Production Cost					
	SW	Midwest	Southeast	Mid-Atlantic	S-Central
Feed cost/ton w/o color (\$)	185.18	181.45	189.81	191.33	183.70
Feed cost/lb meat (¢)	17.33	16.34	17.84	18.90	17.66
Days to 4.6 lbs	48	45	49	53	51
Chick cost/lb (¢)	4.07	4.38	4.17	3.68	3.68
Vac-Med cost/lb (¢)	0.10	0.06	0.09	0.06	0.05
WB & 1/2 parts condemn. cost/lb	0.18	0.28	0.26	0.25	0.23
% mortality	4.22	4.48	6.25	6.31	4.50
Sq. Ft. @ placement	0.81	0.75	0.75	0.80	0.82
Lbs./Sq. Ft.	6.75	6.94	7.58	7.56	7.34
Down time (days)	12	10	13	14	14

Data for week ending April 24, 2004

**Broiler Performance Data (Company)
Live Production Cost**

	Average Co.
Feed cost/ton w/o color (\$)	187.82
Feed cost/lb meat (¢)	17.80
Days to 4.6 lbs	42
Chick cost/lb (¢)	4.02
Vac-Med cost/lb (¢)	0.07
WB & 1/2 parts condemn. cost/lb	0.24
% mortality	5.13
Sq. Ft. @ placement	0.78
Lbs./Sq. Ft.	7.22
Down time (days)	13

Data for week ending April 24, 2004

**Broiler Whole Bird Condemnation
(Company)**

	Average Co.
% Septox	0.216
% Airsac	0.136
% I.P.	0.046
% Leukosis	0.005
% Bruise	0.004
% Other	0.010
% Total	0.417
% 1/2 parts condemnations	0.430

Data for week ending April 24, 2004

Broiler Whole Bird Condemnation (Region)

	SW	Mid-West	S. East	Mid-Atlantic	S. Central
% Septox	0.130	0.295	0.231	0.254	0.205
% Airsac	0.116	0.144	0.168	0.151	0.088
% I.P.	0.053	0.012	0.031	0.041	0.059
% Leukosis	0.000	0.000	0.002	0.023	0.003
% Bruise	0.003	0.001	0.002	0.006	0.006
% Other	0.011	0.005	0.007	0.012	0.007
% Total	0.314	0.457	0.442	0.487	0.367
% 1/2 parts condemnations	0.338	0.806	0.458	0.333	0.426

Data for week ending April 24, 2004