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Blackhead Disease: What have we learned lately?

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Until the discovery of highly effective drugs in the 1960s, histomoniasis was the leading cause of mortality in turkeys. After dimetridazole and ipropran (nitroimidazole compounds) came into common use and outbreaks could be easily controlled, the interest in further work dropped precipitously. However, these products have been banned by regulatory authorities, first in the USA, and more recently in Europe, leaving us with only one product for prevention (nitarsone), and nothing for treatment. This puts us in the position of using indirect methods for control of this disease. Recent work has shown us interesting new features of this disease, and also emphasizes the considerable difference in blackhead of turkeys compared to that of chickens. For thorough reviews of the older and recent literature, see Reid (10), and McDougald (7).

Epidemiology of blackhead in turkeys: One of the more remarkable discoveries shows us how the epidemiology of blackhead is both more and less complicated than we thought. The involvement of the cecal worm (*Heterakis* gallinarum) as an intermediate host, the occasional use of earthworms as an accessory host, and the interaction of *Histomonas melelagridis* with bacteria and other organisms is well known. However, field workers are often confused

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Broiler Performance Data (Region)
Live Production Cost

	SW	Midwest	Southeast	Mid-Atlantic	S-Central
Feed cost/ton w/o color ($)	144.81	130.04	143.60	149.84	145.71
Feed cost/lb meat (¢)	13.75	11.54	13.20	14.06	13.42
Days to 4.6 lbs	41	40	42	41	41
Chick cost/lb (¢)	3.28	4.16	3.72	3.60	3.94
Vac-Med cost/lb (¢)	0.04	0.05	0.06	0.04	0.07
WB & 1/2 parts condemn. cost/lb	0.16	0.16	0.15	0.16	0.11
% mortality	3.82	4.93	4.59	4.07	4.07
Sq. Ft. @ placement	0.84	0.82	0.81	0.83	0.83
Lbs./Sq. Ft.	7.56	6.41	6.86	7.16	6.70
Down time (days)	17	11	15	13	14

Data for week ending November 26, 2005

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by the apparent lack of cecal worms in the affected birds (9). The recent discovery that blackhead could spread through a pen of turkeys in the absence of cecal worms or other vectors gave us new insight into this process (6). Further work showed that such contagiousness could be demonstrated in battery cages, provided that the floor screens were covered with paper (4). Birds apparently became infectious to others in a cage within 2-3 days, and only one day of exposure was sufficient to pass on the infection. These infections were apparently taking place by direct cloacal exposure, brought about by a phenomenon known as cloacal drinking (11). Poults readily became infected when cultured histomonads were applied directly to the vent lips, with stimulation to initiate cloacal drinking (3). All attempts to initiate infections by the oral route were unsuccessful, except when embryonated ova of *H. gallinarum* were given. Further work has shown that transmission takes place mostly when the birds are in direct contact, rather than when they are in contact with contaminated litter. These findings suggest that after some birds in a flock become infected by ingestion of accidentally introduced cecal worm eggs, the infection spreads rapidly through the flock by the newly discovered route. Indeed, we often see flocks were the infection does not spread from one house to others on the same farm, or even from one end of a house to the other, provided there is some barrier to migration and commingling of the birds. This suggests that simple modification of growing facilities with migration barriers could limit the scope of outbreaks to a single partitioned unit.

Epidemiology of blackhead in chickens: Given the complicated nature of blackhead disease and its considerable difference in chickens and turkeys, it should come as no surprise that not all we have discovered will apply to both hosts. In recent years the number of clinical outbreaks in chickens, particularly breeder pullets and cockerels, has increased to near epidemic levels. There does not seem to be any explanation for this increase in outbreaks, nor of the severe nature in many cases. Blackhead outbreaks in chickens, in contrast to what we see in turkeys, causes considerable morbidity, but low mortality. Typically, an outbreak will start with a few dead birds, and may increase to 40-50/week. Mortality may be spread over 3-6 weeks. The actual cause of death may be liver failure in severe cases, or secondary infections and peritonitis coming from ruptured cecal lesions. Flocks recovering from blackhead typically have poor uniformity when housed as layers. The most common time for onset of blackhead in chickens is about 6 weeks of age, however in problem facilities the onset may be earlier and earlier in successive flocks. Some outbreaks have been seen as early as 3 weeks of age. The cecal worms may be more prominent in connection with blackhead in chickens than in turkeys, but even here it is important to keep in mind that it is the larvae which are bringing in the infection. These larvae are only about 2 mm long, and very difficult to see. As the infection progresses, the worms may have time to mature, so they are more visible.

The direct transmission experiments described above for turkeys have been repeated for chickens with negative results (2). The infection did not spread through a pen of chickens after inoculation of a few seeder birds with cultured histomonads. Reasoning that the outbreaks in chickens might be influenced by feeding practices used in the management of body weight, we conducted additional experiments comparing full-fed birds with those on skip-a-day feeding. Again there were negative results. We did not observe a single instance of lateral transmission from infected birds to noninfected birds in the absence of the worm vector. These findings, as well as the pattern of the disease in the field, suggest that blackhead in chickens does not tend to be contagious within a flock as we observed in turkeys, and that all the birds becoming infected have done so directly by the ingestion of cecal worm eggs which they uncover in their intensive litter-pecking activities. It is a general assumption that all chicken houses with earthen floors are contaminated with cecal worms (1), and the potential for exposure is high.

Prevention and control of blackhead: If our experimental results are taken at face value, the recommendations for control vary greatly between chickens and turkeys. Each of the following suggestions should be considered carefully:

1. Preventive use of nitarsone: Even though nitarsone is a relatively expensive feed additive, and does not have approvals for combination with most other feed ingredients (it may be used in combination with bacitracin at 4-50 g/ton in turkeys), its use should be considered in problem farms, especially in chickens where the build-up of cecal worms has increased the exposure rate.

2. Worm control: The most prudent advice seems to be to worm early and worm often. Use a benzamidizole type wormer such as tetramisol or allbendazole, in a form which is highly soluble and easily used in medicators. This family of compounds will kill the larvae before they can release the histomonads. Apparently, the larvae release the histomonads when they molt to the growing stage. It is important to worm in advance of expected blackhead outbreaks. For instance, if outbreaks are seen at 4 weeks, it is important to worm by 3 weeks or earlier. Worming after the onset of an outbreak will help, as not all birds become infected at the same time. Follow-up worming is important to break the continuing exposure

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to more larvae.

3. Treatment of outbreaks with antibiotics: Because of the probability of secondary infections, peritonitis, and other complications of blackhead, the administration of antibiotics during an outbreak is beneficial. Tests have shown that antibiotics (penicillin, tetracyclines, sarafloxacin, bacitracin) do not have any direct effect on *H. melelagridis* and do not generally reduce lesion scores in infected chickens (5). However, these same tests show that there is an improvement in weight gain of infected birds. This suggests that the drugs may be affecting the well-known interaction of bacteria and histomonads in production of virulence. It would seem prudent to reinvestigate the effects of antibiotics in turkeys.

4. Treatment with Roxarsone: Roxarsone (3-Nitro) is common field remedy for blackhead disease in turkeys or chickens, the advantage being that it is available in a water-soluble form, and is closely related to nitarsone. However, there is no available evidence to suggest that roxarsone is effective in killing the histomonads at practical levels. Field observations suggest that the drug is effective in reducing mortality, but after withdrawal would allow relapse. This suggests that the drug would be more useful in chickens, where self-cure is normal and the product could help the birds over the peak of infections while they undergo recovery from natural defense mechanisms.

5. Aggravation of histomoniasis by coccidiosis: Studies show that infections may be worsened by concurrent infection with *E. tenella* (8). As it is a common practice to vaccinate day-old broiler breeder chicks against coccidiosis with live oocysts, it is important to achieve a good uniform exposure. It is not recommended to dilute the vaccine beyond what is directed by the manufacturer, because this leads to less uniformity in vaccination. If some birds are not properly vaccinated, they are more likely to develop severe lesions later, when the other birds have propagated the live Oocysts. This could coincide with the increased infection pressure from blackhead.

6. Cleanout and disinfection: While it may seem heretical to say so, clean-up after a blackhead outbreak in turkeys probably does not contribute much to the likelihood that future flocks in the facility might be at risk. Outbreaks in turkeys arise from the chance introduction of cecal worm ova, probably from workers bringing in contamination on their feet. The pattern of outbreaks appears to be random, and suggests that special procedures after an outbreak are not necessary. In chickens, the situation is entirely different. Outbreaks arise from the build-up of cecal worms in earthen-floored facilities, and tend to increase in frequency, severity, and time of onset, until new management procedures are instituted. Particularly, many producers are using disinfectants, salt, or sulfur treatments after thorough clean-out, hoping to destroy the worm eggs. It is difficult to determine the value of these programs because of the lack of controlled studies, even though good results are reported from the field. Probably, some type of litter/soil treatment, used in concert with clean-out, worm control, and other preventive measures, is of good value.

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Broiler Whole Bird Condemnation (Company)

	Average Co.	Top 25%	Top 5 Co.'s
% Septox	0.183	0.199	0.281
% Airsac	0.041	0.030	0.040
% I.P.	0.027	0.023	0.021
% Leukosis	0.001	0.001	0.001
% Bruise	0.003	0.003	0.001
% Other	0.012	0.010	0.010
% Total	0.267	0.266	0.355
% 1/2 parts condemnations	0.340	0.353	0.356

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Broiler Performance Data (Company)
Live Production Cost

	Average Co.	Top 25%	Top 5 Co.'s
Feed cost/ton w/o color ($)	145.78	142.78	146.85
Feed cost/lb meat (¢)	13.45	13.03	12.96
Days to 4.6 lbs	41	39	39
Chick cost/lb (¢)	3.80	3.60	3.64
Vac-Med cost/lb (¢)	0.06	0.04	0.01
WB & 1/2 parts condemn. cost/lb	0.15	0.15	0.19
% mortality	4.09	3.57	2.87
Sq. Ft. @ placement	0.83	0.84	0.80
Lbs./Sq. Ft.	6.95	7.26	7.51
Down time (days)	14	15	13

Data for week ending November 26, 2005

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 (Region)

	SW	Mid-West	S. East	Mid-Atlantic	S. Central
% Septox	0.262	0.237	0.187	0.168	0.135
% Airsac	0.043	0.029	0.053	0.053	0.035
% I.P.	0.025	0.011	0.008	0.054	0.018
% Leukosis	0.006	0.000	0.001	0.000	0.001
% Bruise	0.006	0.001	0.002	0.004	0.004
% Other	0.012	0.008	0.019	0.004	0.013
% Total	0.354	0.286	0.269	0.284	0.207
% 1/2 parts condemnations	0.323	0.526	0.345	0.360	0.256

Data for week ending November 26, 2005

COBB-VANTRESS

Aviagen

Hubbard

Primary Breeders Veterinary Association

HERITAGE

The Poultry Informed Professional Newsletter is published with support from The Primary Breeder Veterinarians Association.

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 2 Percent

According to the latest National Agricultural Statistics Service (NASS) reports, commercial hatcheries in the 19-State weekly program set 201 million eggs in incubators during the week ending October 29, 2005. This was up 2 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 Up 3 Percent

Broiler growers in the 19-State weekly program placed 170 million chicks for meat production during the week ending October 29 2005. Placements were up 3 percent from the comparable week a year earlier. Cumulative placements from January 2, 2005 through October 29, 2005 were 7.51 billion, up 1 percent from the same period a year earlier.

September Egg Production Up Slightly

U.S. egg production totaled 7.38 billion during September 2005, up slightly from last year. Production included 6.31 billion table eggs, and 1.07 billion hatching eggs, of which 1.01 billion were broiler-type and 59 million were egg-type. The total number of layers during September 2005 averaged 342 million, down 1 percent from a year earlier. September egg production per 100 layers was 2,155 eggs, up 1 percent from September 2004.

All layers in the U.S. on October 1, 2005, totaled 343 million, down slightly from a year ago. The 343 million layers consisted of 286 million layers producing table or market type eggs, 55.1 million layers producing broiler-type hatching eggs, and 2.46 million layers producing egg-type hatching eggs. Rate oflay per day on October 1, 2005, averaged 71.9 eggs per 100 layers, up 1 percent from October 1, 2004.

Egg-Type Chicks Hatched Down 8 Percent

Egg-type chicks hatched during September 2005 totaled 33.8 million, down 8 percent from September 2004. Eggs in incubators totaled 31.8 million on October 1, 2005, down 5 percent from a year ago.

Domestic placements of egg-type pullet chicks for future hatchery supply flocks by leading breeders totaled 375,000 during September 2005, up 83 percent from September 2004.

Broiler-Type Chicks Hatched Down Slightly

Broiler-type chicks hatched during September 2005 totaled 770 million, down slightly from September 2004. Eggs in incubators totaled 632 million on October 1, 2005, up 2 percent from a year earlier.

Leading breeders placed 7.13 million broiler-type pullet chicks for future domestic hatchery supply flocks during September 2005, down 8 percent from September 2004.

Turkey Eggs in Incubators on October 1 Up Slightly

Turkey eggs in incubators on October 1, 2005, in the United States totaled 26.7 million, up slightly from October 1 a year ago. Eggs in incubators were 5 percent below the September 1, 2005 total of 28.2 million eggs. Regional changes from the previous year were: East North Central up 1 percent, West North Central up 2 percent, North and South Atlantic up 3 percent, South Central down 24 percent, and West down 1 percent.

Poults Placed During September Up 7 Percent From Last Year

The 22.7 million poults placed during September 2005 in the United States were up 7 percent from the number placed during the same month a year ago. Placements were down 5 percent from August 2005. Regional changes from the previous year were: East North Central up 10 percent, West North Central up 13 percent, North and South Atlantic up 5 percent, South Central down 15 percent, and West up 8 percent.

Broiler Production Forecasts Decreased

According to the latest Economic Resarch Service (ERS) reports, The forecast for third-quarter 2005 U.S. broiler production was reduced by 150 million pounds to 8.95 billion pounds, and the fourth quarter 2005 production estimate was reduced by 50 million pounds to 8.75 billion pounds.

Over the last several months, the number of broiler-type chicks being placed for growout has been only slightly higher than the previous year. From July 2 to September 24, a period of 13 weeks, the number of broiler-type chicks being placed each week for growout averaged 174 million. This is 0.5 percent below the average number of birds being placed for growout compared with the same period the previous year. The reduction in the number of birds

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being placed for growout and the relatively small gain in average weights at slaughter are the chief reasons behind lower broiler production estimates for third- and fourth-quarter 2005.

The smaller reduction in the fourth quarter production estimate is due to the upturn in the number of birds being placed in incubators over the last 5 weeks, (September 3 to October 1). During this period, the number of eggs placed in incubators has averaged 2.5 percent higher than the previous year. This upturn in the number of eggs being placed in incubators is expected to result in higher numbers of broilers going to slaughter by the end of the fourth quarter.

Broiler slaughter in August was 3.1 billion pounds, up 4 percent from a year earlier. The increase in broiler slaughter was boosted by one additional slaughter day in August 2005 compared with the previous year. An extra slaughter day normally results in about a 5-percent boost in monthly slaughter, other things equal. The increase in broiler production in August resulted from a 2.9-percent increase in the number of broilers slaughtered and a nearly 0.4 percent increase in their average liveweight.

Broiler Prices Higher for Leg Meat

The combination of slower growth in overall broiler production and a strong export market has placed upward pressure on prices of most broiler parts made from leg meat. In the Northeast market in September, bulk leg-quarter prices averaged 47.4 cents per pound, up 49 percent from the previous year. This large increase in leg-quarter prices has also pushed up other leg meat products. Drumsticks averaged 59.4 cents per pound, up 57 percent from 2004, while prices for boneless/skinless thighs and whole thighs were up 81 and 70 percent from a year ago. With exports expected to remain strong through the remainder of the year, leg meat prices are forecast to remain well above their year-earlier levels.

Turkey Prices Higher

With turkey meat production in 2005 forecast to be only slightly higher than the previous year and exports expected to show double-digit growth, strong prices for most turkey products are expected through the remainder of 2005. The three-region price for whole hens and toms averaged nearly 80 cents a pound in September, up 7 percent from September 2004. Weekly prices for turkey parts during September were also higher. Turkey breast prices averaged around $1.10 per pound compared with about 97 cents per pound a year earlier, an increase of around 13 percent. Prices for boneless/skinless breast rose even more, with prices in September 2005 20 to 30 percent higher than a year earlier.

Turkey Production 4 Percent Higher in August

U.S. turkey meat production totaled 488 million pounds in August 2005, up 4 percent from the previous year. The number of birds slaughtered was up 2.5 percent while the average weight of birds was 1.1 percent higher than the previous year. This small increase in average weight is a major departure from the weight gains posted earlier in the year. From January to July, the average weight for all turkeys at slaughter had been 4.8 percent higher than in the same period in 2004. This large increase in average weight had partially offset the decline in the number of birds being slaughtered and masked the fact that the number of poults being placed for growout had been falling for some time.

Broiler Exports Up in Third Quarter

Third-quarter 2005 broiler exports for August are almost 28 percent higher than August of 2004. The primary reason for the increase is continued growth in shipments to Russia, the Baltic States, Mexico, and Canada. Over the past month, Russia's broiler imports from the United States have increased by over 45 million pounds, a 28-percent increase from July. During this same period, the Baltic States (Estonia, Latvia, and Lithuania), Mexico, and Canada increased their imports of U.S. broilers by over 14, 7 and 2 million pounds, respectively. Currently, third-quarter 2005 broiler exports are doing well, showing a 12-percent increase from June to July, and a 22-percent increase from July to August. Broiler exports are on track to meet the third-quarter forecast.

August Turkey Exports Remain on Track After July Slow Start

Turkey exports totaled 50.8 million pounds in August, up 9 percent from August 2004. Although the year-over-year has increased, total turkey exports for the third-quarter from month-to-month have varied. Turkey exports from June to July 2005 declined by 9 percent, while exports from July to August increased by 13 percent. The chief cause of this slowdown has been reduced imports by China and Hong Kong. In July, shipments to China, Hong Kong, and other importing countries were reduced by almost 1 million pounds, 500,000 pounds, and 2.3 million pounds, respectively. However, in August, China, Hong Kong and Other importing countries' shipments increased from July's quantities by 884,000, 526,000 and 666,000 pounds, respectively. As turkey producers gear-up for the holiday season, U.S. turkey exports are expected to continue to increase throughout the third quarter and into the fourth quarter.

Meetings, Seminars and Conventions

2006 January

January 23-24: ***International Poultry Scientific Forum,*** 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

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

January 29-Feb 1: ***2006 Georgia International Poultry Course,*** University of Georgia, Athens, GA. Contact: Cindy Walker, University of Georgia Poultry Science Department, 306 Poultry Science Building, Athens, GA 30677-2772. Phone: 706-542-9139; cindyw@uga.edu.

2006 February

February 9-11: ***National Turkey Federation (NTF) Annual Convention 2006,*** Orlando, Florida 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; Email: info@turkeyfed.org; Website: www.eatturkey.com

February 20-22: ***Poultry Focus Asia 2006,*** Queen Sirikit National Convention Center, Bangkok, Thailand. Phone: +44 1377 256316; Fax: +44 1377 253640; Email: conf@positiveaction.co.uk; website: www.positiveaction.co.uk

February 27-March 3: ***PEPA Annual Convention,*** Turtle Bay Resort, Oahu, Hawaii. Contact: Pacific Egg & Poultry Association, 1521 I St., Sacramento, CA 95814. Phone: 916-441-0801; http://www.pacificegg.org

2006 March

March 5: ***ACPV Workshop,*** Contact: Babak Sanei, DVM, Poultry Ontario Ministry of Agriculture, Food and Rural Affairs, Guelp, ON N1G2W1. Phone: 519-824-4120 Ext. 54650; Fax: 519-763-2253; Email: babak.sanei@omaf.gov.on.ca

March 6-8: ***55th Western Poultry Disease Conference,*** Sacramento, California, USA. Contact: Conference & Event Services, Davis, California. Phone: +1-530-752-0198; Email: confandeventsvcs@ucdavis.edu. Website: conferences.ucdavis.edu/wpdc

March 7-8: ***Louisiana Poultry Seminar,*** Shreveport, LA. Contact: Louisiana Poultry Federation, Poultry Science, 120 Ingram Hall, Louisiana State University, Baton Rouge, LA 70803. Phone: 225-578-2219; tlavergne@agcentr.lsu.edu

March 8-9: ***NPI Annual Convention,*** New World Inn & Conference Center, Columbus, Neb. Contact: Nebraska Poultry Industries Inc., University of Nebraska, A103 Animal Sciences, P.O. Box 830908, Lincoln, Neb. 68583-0908. Phone: 402-472-2051

March 21-23: ***Midwest Poultry Federation Convention 2006,*** St. Paul, Minnesota USA. Contact: Midwest Poultry Federation, 108 Marty Drive, Buffalo, Minnesota 55313 USA. Phone: +1 763-682-2171; Fax: +1 763-682-5546; Email: Nicole@midwestpoultry.com; Website: www.midwestpoultry.com

2006 April

April 3-6: ***6th International Symposium on Avian Influenza,*** St. John's College, Cambridge, UK. Contact: Dr. I. Capua. Fax: +39 49 8084360; Email: icapua@izsvenezie.it or Dr. D. Swayne. Fax: +1 706 5463161; Email: dswayne@sepri.usda.gov

April 24-27: ***Middle East Poultry Show 2006,*** Dubai World Trade Cente, Dubai, United Arab Emirates. Contact: Mediac Communication & Exhibitions LLC, PO Box 5196, Dubai, United Arab Emirates. Phone: +971 4 2692004; Fax: +971 4 2691296; Email: mediac@emirates.net.ae; Website: www.mediaccom.com

April 28-29: ***FPF Poultry Days,*** Beach & Yacht Club at Disney, Orlando, FL. Contact: Florida Poultry Federation, 4508 Oak Fair Blvd., No. 290, Tampa, FL 33610. Phone: 813-628-4551; fpf290@aol.com

2006 May

May 4-7: ***GPF Annual Meeting,*** Brasstown Valley Resort, Young Harris, GA. Contact: Georgia Poultry Federation, P.O. Box 763, Gainesville, GA 30503. Phone: 770-532-0473

May 9-10: ***British Pig & Poultry Fair 2006,*** Warwickshire, United Kingdom. Contact: Haymarket Land Events, Royal Agricultural Society of England, Stoneleigh Park, Warwickshire CV8 2LZ England. Phone: +44 24 76 696969; Fax: +44 24 76 696900; Email: alice.bell@haynet.com; Website: www.pigandpoultryfair.org.uk

May 15: ***Respiratory Diseases 2006,*** NH Utrecht Hotel, Utrecht, Holland. Phone: +44 1377 256316; Fax: +44 1377 253640; Email: conf@positiveaction.co.uk; Website: www.positiveaction.co.uk

May 16-18: ***VIV Europe,*** (Postponed from November 2-4, 2005), Jaarbeurs, Utrecht, The Netherlands. Contact: VNU Exhibitions Europe BV, PO Box 8800, 3503 RV Utrecht, The Netherlands. Phone: +31 30 295 2788; Fax: +31 30 295 2809; Email: viv.europe@vnuexhibitions.com; Website: sites.vnuexhibitions.com/sites/viv

May 20: ***GPF Night of Knights,*** Cobb Galleria Center, Atlanta, GA. Contact: Georgia Poultry Federation, P.O. Box 763, Gainesville, GA 30503. Phone: 770-532-0473.

May 22-26: ***International Seminar in Poultry Pathology and Production,*** organized by The University of Georgia and the Colombian Poultry Veterinary Association (AMEVEA), at the University of Georgia, Athens, Georgia. Contact: Sem2006@uga.edu

May 24-26: ***VIV Russia 2006,*** Moscow, Russia. Contact: Website: sites.vnuexhibitions.com/sites/viv

2006 June

June 8-10: ***PT Poultry Festival,*** Little Rock, AR. Contact: Judith Kimbrell, The Poultry Federation, 321 S. Victory St., Little Rock, AR 72201. Phone: 501-375-8131; jud@alltel.net; http://www.thepoultryfederation.com

June 16-17: ***Delmarva Chicken Festival,*** Snow Hill, MD. Contact: Delmarva Poultry Industry Inc., 16686 County Seat Hwy., Georgetown, Del. 19947. Phone: 302-858-9037; dpi@dpichicken.com: http://www.dpichicken.org

Meetings, Seminars and Conventions

2006 July

July 15-19 : ***AVMA/AAAP Convention,*** Honolulu, Hawaii, Pa. Contact: American Veterinary Medical Association, 1931N. Meacham Road, Suite 100, Schaumburg, Ill. 60173. Phone: 847-925-8070; avmainfo@avma.org.

July 13-16 : ***SCPF Annual Conference,*** Crowne Plaza Resort, Hilton Head Island, S.C. Contact: South Carolina Poultry Federation, 1921-A Pickens St., Columbia, S.c. 29201. Phone: 803-779-4700; martyg@scpoultry.com

July 16-19 : ***Poultry Science Association (PSA) Annual Meeting 2006,*** Edmonton, Alberta, Canada. Contact: Mary Swenson, Poultry Science Association, Inc., 1111 N. Dunlap Avenue, Savoy, Illinois 61874 USA. Phone: +217 356 5285; Fax: +1 217 398 4119; Email: marys@assochq.org; Website: www.fass.org or www.poultryscience.org

July 20-22 : ***TPF Annual Convention,*** San Antonio, TX. Contact: Texas Poultry Federation, 595 Round Rock W. Drive, Suite 305, Round Rock, Texas 78681. Phone: 512-248-0600; tpf@texaspoultry.org; http://www.texaspoultry.org.

2006 August

Aug 4-5: ***TEPA Summer Getaway,*** Nashville, TN. Contact: Tennessee Egg & Poultry Association, P.O. Box 1272, Brentwood, Tennessee 37024-1272. Phone: 615-370-0001; annccox@aol.com; http://www.tnpoultry.org

2006 September

Sept. 10-14: ***12th European Poultry Conference,*** Veronafiere Congress Centre, Verona, Italy. Contact: Secretariat XII WPSA European Conference, Department of Food Science, Via San Giacoma 9, 40126 Bologna, Italy. Phone: +39 051 209 4221; Fax: +39 051 251 936; Email: wpsa@alma.unibo.it; Website: www.epc2006.veronafiere.it

Sept. 27-29 : ***VIV China 2006,*** (Postponed from June 2006-dates not yet specified), Beijing, P.R. China. Contact: VNU Exhibitions Europe B.V., PO Box 8800, 3503 RV Utrecht, The Netherlands. Phone: +31 30 295 2772; Fax: +31 30 295 2809; Email: viv.china@vnuexhibitions.com; Website: sites.vnuexhibitions.com/sites/viv or Mr. Ruifent Xu, CNAVS Trade Fair Office. Phone +86 10 649 50 373; Fax: +86 10 649 50 374; Email: rfxu@china-av.net

2006 October

October 10-14: ***World Poultry Science Association (WPSA) European Poultry Conference 2006,*** Verona, Italy. Contact: Secretariat - XII WPSA European Converence, Department of Food Science, University of Bologna, Via San Giacomo 9, 40126 Bologna, Italy. Phone: +39 041 209 4221; Fax: +39 051 251 936; Email: epc2006@wpsa.it; Website: www.epc2006.veronafiere.it

2006 November

November 14-17: ***EuroTier 2006,*** 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-Frankfurt.de; Website: www.eurotier.de

2007 January

Jan. 31-Feb. 2: ***2007 International Poultry Exposition,*** Georgia World Congress Center, Atlanta, Georgia, USA. Contact: US Poultry & Egg Association, 1530 Cooledge Road, Tucker, Georgia 30084 USA. Phone: +1 770 493 9401; Fax: +1 770 493 9257; Website: www.poultryegg.org

2007 March

March 20-22: ***Midwest Poultry Federation Convention 2007,*** St. Paul, Minnesota USA. Contact: Midwest Poultry Federation, 108 Marty Drive, Buffalo, Minnesota 55313 USA. Phone: +1 763-682-2171; Fax: +1 763-682-5546; Email: Nicole@midwestpoultry.com; Website: www.midwestpoultry.com

2008 August

August 10-15: ***XXIII World's Poultry Congress,*** Convention and Exhibition Centre, Brisbane, Australia. Contact: WPC 2008 Congress, Intermedia Convention & Event Management, PO Box 1280, Milton, Queensland 4064, Australia. Phone: +61 7 3858 5594; Fax: +61 7 3858 5510; Email: wpc2008@im.com.au; Website: www.wpsa.info

Broiler Performance Data (Region) Live Production Cost					
	SW	Midwest	Southeast	Mid-Atlantic	S-Central
Feed cost/ton w/o color ($)	148.05	134.60	150.06	150.81	146.21
Feed cost/lb meat (¢)	14.05	12.01	13.69	14.33	13.21
Days to 4.6 lbs	41	40	42	41	42
Chick cost/lb (¢)	3.29	3.99	3.99	3.34	3.68
Vac-Med cost/lb (¢)	0.05	0.04	0.06	0.04	0.05
WB & 1/2 parts condemn. cost/lb	0.16	0.17	0.12	0.17	0.14
% mortality	3.67	4.29	3.96	4.20	4.18
Sq. Ft. @ placement	0.84	0.82	0.83	0.85	0.81
Lbs./Sq. Ft.	7.65	6.52	6.62	7.56	5.45
Down time (days)	16	11	12	12	14

Data for week ending October 29, 2005

Broiler Performance Data (Company)
Live Production Cost

	Average Co.	Top 25%	Top 5 Co.'s
Feed cost/ton w/o color ($)	148.75	143.69	148.02
Feed cost/lb meat (¢)	13.66	13.00	13.04
Days to 4.6 lbs	41	40	39
Chick cost/lb (¢)	3.78	3.67	3.85
Vac-Med cost/lb (¢)	0.05	0.04	0.05
WB & 1/2 parts condemn. cost/lb	0.15	0.15	0.17
% mortality	4.05	3.66	3.68
Sq. Ft. @ placement	0.83	0.85	0.85
Lbs./Sq. Ft.	6.96	7.03	6.56
Down time (days)	13	15	18

Data for week ending October 29, 2005

Broiler Whole Bird Condemnation (Region)

	SW	Mid-West	S. East	Mid-Atlantic	S. Central
% Septox	0.235	0.250	0.127	0.169	0.180
% Airsac	0.039	0.032	0.034	0.049	0.043
% I.P.	0.025	0.010	0.019	0.060	0.008
% Leukosis	0.005	0.000	0.001	0.001	0.001
% Bruise	0.005	0.001	0.004	0.004	0.002
% Other	0.008	0.008	0.012	0.005	0.014
% Total	0.316	0.302	0.196	0.286	0.247
% 1/2 parts condemnations	0.336	0.585	0.284	0.415	0.344

Data for week ending October 29, 2005

Broiler Whole Bird Condemnation (Company)

	Average Co.	Top 25%	Top 5 Co.'s
% Septox	0.172	0.211	0.241
% Airsac	0.058	0.028	0.045
% I.P.	0.030	0.026	0.023
% Leukosis	0.001	0.002	0.009
% Bruise	0.003	0.003	0.005
% Other	0.010	0.007	0.009
% Total	0.256	0.276	0.331
% 1/2 parts condemnations	0.362	0.427	0.548

Data for week ending October 29, 2005