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Using GLOGERM™ to evaluate Biosecurity Practices

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As part of an ongoing and extensive epidemiological study on the spread of disease, the current Masters in Avian Medicine students, Mohamed El Gazzar and Deirdre Johnson have been trying to assess the efficacy of current biosecurity practices. They recently presented their findings at the Georgia Veterinary medical Association meeting and this issue of the PIP contains a summary of that presentation.

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Broiler Live Production Cost	Average Company
Feed Cost/ton w/o color (\$)	249.44
Feed cost /lb meat (c)	22.74
Days to 4.6 lbs	41
Chick cost / lb (c)	4.93
Vac-Med cost/lb (c)	0.06
WB & ½ parts condemn. Cost/lb	0.17
% mortality	3.92
Sq.Ft. @ placement	0.84
Lbs/sq. ft.	6.93
Downtime (days)	18

Data for week ending 30 May 2009

An Evaluation of Some Common Biosecurity Practices Using GLOGERM™

Introduction

Due to the current disease threats and challenges facing the poultry industry, an epidemiological study spanning several years, has been undertaken in order to better understand the spread of disease during an outbreak in Georgia. This epidemiological study, required the evaluation of biosecurity practices and their efficacy in preventing the spread of the disease causing agent.

In this experiment, microbial spread was evaluated using a product called GLOGERM™, which glows under ultraviolet light. Litter containing Glogerm was used as a source of contamination for personal protective equipment and vehicles and microbial spread was simulated by tracking the GLOGERM™ contaminated objects. In addition, the efficacy of footbath disinfectants in reducing the spread of disease was evaluated by measuring the reduction in coliform counts.

Evaluation of the Efficacy of Footbath Disinfectants

The objective of this experiment was to assess the efficacy of footbaths in reducing microbes on boot covers after litter contamination and to evaluate the transfer of microbes in the footbath to clean boot covers. Coliform counts from swabs of boots, before and after the footbath use, acted as the indicator of total contamination. The disinfectants evaluated included a phenol, quaternary ammonium, and iodine product as well as water for a control.

Initial observations were that water was most effective in the physical removal of organic matter and reduction in bacterial counts over the iodine product, followed by the quaternary ammonia product, and lastly by the phenol product. However, coliform counts were not significantly reduced for any product after 30 seconds of footbath contact. No transference of coliforms to the clean boot (cross contamination from the footbath) occurred for the quaternary ammonia and iodine products; however, coliforms were transferred to the clean boot from the footbath with the water and phenol products. After footbath use, the coliform counts in the bath were significantly reduced for the iodine and quaternary ammonia products and only slightly reduced with the phenol product. Twenty-four hours after footbath use, the coliform counts in all footbaths were too numerous to count.

Evaluation of Personal Protective Equipment

The objective of this experiment was to evaluate the efficacy of personal protective equipment in preventing the spread of fecal contaminated litter with GLOGERM™. The personal protective equipment included hairnets, masks, goggles, gloves, coveralls, and boots. After handling of the birds and litter inside the pens, replicate trials were conducted to evaluate the distance of drag of the GLOGERM™ contaminated litter outside the house on the personal protective equipment.

GLOGERM™ contaminated litter tracked and transferred to the grass outside up to a distance of 10 feet. Before removal of personal protective equipment, the contamination was highest on the hands, soles of the boots, and lower coveralls. The order of removal of the personal protective equipment highly influenced the level of contamination of the underlying shoes and skin. Con-

tamination of the shoes occurred when removing boots before coveralls, allowing transfer of the litter from the coveralls to the unprotected shoes during coverall removal. In conclusion, boots should be placed prior to coveralls in order to allow for the removal of the coveralls prior to the boots. Contamination of the hands resulted from removal of gloves prior to removal of all other personal protective equipment.

Evaluation of Vehicle Contamination and Disinfection

This experiment assessed the transmission of microbes by vehicles through the use of GLOGERM™ contaminated litter on tires. The efficacy of tire washing, as simple biosecurity practice was then evaluated.

Vehicles with GLOGERM™ contaminated tires were detected up to 12 miles or more on pavement. The transmission of contamination from tires to the ground was detected for less than a mile away from the point of contamination. In addition to the distance, the nature of the ground surface was another factor for transmission. GLOGERM™ contaminated litter transference was detected only on gravel or grass surfaces, but not on pavement surfaces. This indicated that there is a possibility of a vehicle contaminating the next visited farm, especially if the vehicle is driven on gravel or grass.

By washing tires using two different commonly used washing methods, which included, power washing and scrub brushing, the experiment consistently found missed spots, especially on the bottom surface of the tire next to the ground. The optimal washing time per tire was 60 seconds. Another observation was the transmission of contamination from tires to the ground and to other parts of the car after the tire wash, especially with the power wash. This observation suggests that tire wash should be performed on the farm before exiting.

Conclusions

In general, conclusions of the experiment can be summarized as follows:

- Water as well as phenol, iodine, and quaternary ammonia products reduced coliform counts on boot covers after footbath use, but the reduction of count was due to the physical removal of the litter material, not the chemical inactivation of the coliforms by disinfectants.
- 30 seconds is not enough contact time for any of the commonly used disinfectants in the industry to effectively inactivate coliforms.
- The quaternary ammonia and iodine products effectively prevented the transference of coliforms to the clean boots; however, the phenol product did not prevent coliform transfer to clean boots.
- Place boots over shoes prior to placing on coveralls and remove coveralls prior to removing boots in order to prevent cross contamination from the coveralls to unprotected shoes.
- Always remove gloves last to prevent cross contamination to hands.
- Vehicles represent a big potential for transmission of disease through contaminated tires.
- Transmission of contamination to the next visited farm can be minimized by parking outside

the farm or as far as possible from houses.

- A good tire wash can eliminate tire contamination. Washing should be done under good light, for 60 seconds per tire, and the vehicle should be moved to facilitate washing the bottom surface of the tire.
- Contamination of the ground after the tire wash indicates the necessity of performing the tire wash on the farm before leaving.

Final Comments

Included in this review are the preliminary observations made from the experiment. Official results and statistical analyses are to follow in a published format for a scientific journal. This experiment was conducted collaboratively with Dr. Dana Cole, Dr. Fernanda Dorea, and Dr. Charles Hofacre.

AVMA Expresses Concern over Antibiotics Legislation

By Dr. Ashley Shelton, Assistant Director of the GRD

The AVMA and other members of the animal health community continue to monitor and express concern over Congress legislating how and which antibiotics can be used in animal agriculture. In March, Senator Edward Kennedy (MA) and Representative Louise McIntosh Slaughter (28th-NY) re-introduced the [Preservation of Antibiotics for Medical Treatment Act \(PAMTA\)](#). This legislation purports to preserve the effectiveness of medically important antibiotics used in the treatment of human and animal diseases by reviewing the safety of certain antibiotics used for 'non-therapeutic' purposes in food-producing animals. The bill defines "non-therapeutic use" as the use of a drug in an healthy animal as a feed or water additive for growth promotion, feed efficiency, weight gain, routine disease prevention or other routine purposes.

The AVMA is currently [opposed](#) to PAMTA. Not only would the legislation cause an increase in animal disease and death – an unfortunate and unintended consequence – but evidence has also shown that such political bans of this nature do not have the intended benefit of reducing antibiotic resistance patterns in humans. Additionally, a 2000 ban of antibiotics as growth promoters in Denmark, with a pork industry roughly equivalent to the size of the pork herd in Iowa, has resulted in greater amounts of antibiotics used to treat animal disease.

As we continue our education efforts on this issue, we are finding numerous misconceptions surrounding the use of antibiotics in animal agriculture. Many people, for example, don't know that the [FDA](#) has approved four uses of antibiotics in food animals: treatment, prevention, control and growth promotion. Veterinarians use antibiotics to prevent and control the spread of disease when they believe an existing disease could rapidly spread to more animals, or to prevent disease at times when animals are vulnerable, such as weaning. Certain antibiotics, not steroids or hormones, are approved for use in growth promotion. Data shows that these antibiotics often treat subclinical disease, as well as provide an immuno-protective effect, which in turn allow the animal to process feed more efficiently and achieve its full growth potential.

In addition to a very stringent FDA approval process for animal antibiotics, often more so than for human antibiotics, there are several layers of protection in place to ensure these drugs are used without harm to public health. In addition to withdrawal times which prevent residues of antibiotics in meat, milk, and eggs, there are post-approval drug monitoring and review requirements, responsible use guidelines for [veterinarians](#) and producers, public and private [surveillance systems](#) to monitor for the emergence of antibiotic resistance and [pathogen reduction programs](#) in food-processing facilities.

For more than 40 years, antibiotics have been used to treat sick animals, prevent illness and maintain the health of animals, which translates to the safest food possible for U.S. consumers.

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

Chicken and Eggs

Released May 22, 2009, by the National Agricultural Statistics Service (NASS)

U.S. egg production totaled 7.46 billion during April 2009, up 1 percent from last year. Production included 6.41 billion table eggs, and 1.05 billion hatching eggs, of which 980 million were broiler-type and 71 million were egg-type. The total number of layers during April 2009 averaged 340 million, down slightly from last year. April egg production per 100 layers was 2,196 eggs, up 2 percent from April 2008.

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All layers in the U.S. on May 1, 2009 totaled 339 million, down slightly from last year. The 339 million layers consisted of 282 million layers producing table or market type eggs, 53.9 million layers producing broiler-type hatching eggs, and 3.01 million layers producing egg-type hatching eggs. Rate of lay per day on May 1, 2009, averaged 72.4 eggs per 100 layers, up 1 percent from May 1, 2008.

Egg-Type Chicks Hatched Down 4 Percent

Egg-type chicks hatched during April 2009 totaled 40.6 million, down 4 percent from April 2008. Eggs in incubators totaled 35.8 million on May 1, 2009, down 12 percent from a year ago. Domestic placements of egg-type pullet chicks for future hatchery supply flocks by leading breeders totaled 307 thousand during April 2009, up 16 percent from April 2008.

Broiler-type chicks hatched during April 2009 totaled 756 million, down 6 percent from April 2008. Eggs in incubators totaled 628 million on May 1, 2009, down 6 percent from a year earlier. Leading breeders placed 6.16 million broiler-type pullet chicks for future domestic hatchery supply flocks during April 2009, down 13 percent from April 2008.

Broiler Hatchery

Released June 10, 2009, by the NASS, Agricultural Statistics Board, USDA

Broiler-Type Eggs Set In 19 Selected States Down 6 Percent

Commercial hatcheries in the 19-State weekly program set 204 million eggs in incubators during the week ending June 6, 2009. This was down 6 percent from the eggs set the corresponding week a year earlier. Average hatchability for chicks hatched during the week was 85 percent. Average hatchability is calculated by dividing chicks hatched during the week by eggs set three weeks earlier.

Broiler Chicks Placed Down 5 Percent

Broiler growers in the 19-State weekly program placed 170 million chicks for meat production during the week ending June 6, 2009. Placements were down 5 percent from the comparable week a year earlier. Cumulative placements from December 28, 2008 through June 6, 2009 were 3.86 billion, down 6 percent from the same period a year earlier.

Turkey Hatchery

Released May 15, 2009, NASS, Agricultural Statistics Board, USDA

Eggs in Incubators on May 1 Down 13 Percent from Last Year

Turkey eggs in incubators on May 1, 2009, in the United States totaled 28.9 million, down 13 percent from May 1, 2008. Eggs in incubators were down 2 percent from the April 1, 2009 total of 29.7 million eggs. Regional changes from the previous year were: East North Central down 9 percent, West North Central down 11 percent, North and South Atlantic down 13 percent, and South Central and West down 22 percent.

Turkey poults hatched during April 2009, in the United States totaled 24.8 million, down 7 percent from April 2008. Poults hatched were up 1 percent from March 2009 total of 24.5 million poults. Regional changes from the previous year were: East North Central down 3 percent, West North Central up slightly, North and South Atlantic down 10 percent, and South Central and West down 18 percent.

Net Poults Placed During April Down 6 Percent from Last Year

The 24.3 million net poults placed during April 2009 in the United States were down 6 percent from the number placed during the same month a year earlier. Net placements were up 2 percent from the March 2009 total of 23.8 million.

Current Month Charts

Broiler Performance Data Live Production Cost	Region					Average Company
	SW	Midwest	Southeast	Mid-Atlantic	S-Central	
Feed Cost/ton w/o color (\$)	242.72	231.84	255.34	247.15	241.53	246.19
Feed cost /lb meat (c)	22.02	21.31	22.83	23.48	22.45	22.42
Days to 4.6 lbs	41	40	40	39	40	40
Chick cost / lb (c)	5.03	4.66	5.14	4.33	4.72	5.01
Vac-Med cost/lb (c)	0.08	0.03	0.11	0.04	0.04	0.06
WB & ½ parts condemn. Cost/lb	0.17	0.21	0.14	0.16	0.15	0.16
% mortality	3.86	4.78	4.05	4.03	3.58	3.95
Sq.Ft. @ placement	0.78	0.79	0.81	0.95	0.81	0.82
Lbs/sq. ft.	7.19	7.34	6.84	7.14	7.56	7.03
Downtime (days)	16	11	19	19	17	17

Broiler Whole Bird Condemnation	Region					Average Company
	SW	Midwest	Southeast	Mid-Atlantic	S-Central	
% Septox	0.145	0.200	0.094	0.122	0.063	0.116
% Airsac	0.037	0.087	0.052	0.052	0.038	0.044
% I.P.	0.008	0.051	0.004	0.014	0.023	0.014
% Leukosis	0.000	0.001	0.000	0.004	0.002	0.001
% Bruises	0.002	0.001	0.004	0.001	0.001	0.002
% Other	0.004	0.002	0.014	0.015	0.007	0.008
% Total	0.196	0.342	0.168	0.208	0.132	0.185
% ½ parts condemns	0.267	0.291	0.209	0.290	0.353	0.300

Data for week ending 23 May, 2009

Previous Month Charts

Broiler Performance Data Live Production Cost	Region					Average Company
	SW	Midwest	Southeast	Mid-Atlantic	S-Central	
Feed Cost/ton w/o color (\$)	234.75	225.26	245.06	239.99	234.46	238.40
Feed cost /lb meat (c)	21.48	20.73	22.18	22.61	21.63	21.79
Days to 4.6 lbs	41	40	41	40	40	41
Chick cost / lb (c)	4.86	4.77	5.22	4.43	4.83	4.99
Vac-Med cost/lb (c)	0.05	0.03	0.13	0.06	0.04	0.06
WB & ½ parts condemn. Cost/lb	0.17	0.23	0.17	0.18	0.16	0.17
% mortality	4.16	5.41	4.48	3.96	3.83	4.17
Sq.Ft. @ placement	0.78	0.79	0.81	0.92	0.80	0.82
Lbs/sq. ft.	7.23	7.30	6.87	7.26	7.51	7.09
Downtime (days)	17	13	19	20	18	18

Broiler Whole Bird Condemnation	Region					Average Company
	SW	Midwest	Southeast	Mid-Atlantic	S-Central	
% Septox	0.131	0.233	0.108	0.126	0.72	0.122
% Airsac	0.039	0.101	0.086	0.078	0.073	0.070
% I.P.	0.006	0.024	0.004	0.039	0.030	0.019
% Leukosis	0.000	0.000	0.000	0.003	0.002	0.001
% Bruises	0.002	0.001	0.005	0.002	0.002	0.002
% Other	0.027	0.004	0.016	0.013	0.007	0.011
% Total	0.207	0.364	0.220	0.261	0.185	0.226
% ½ parts condemns	0.272	0.340	0.236	0.323	0.350	0.299

Data for week ending 25 April, 2009

Meetings, Seminars and Conventions

2009

July

July 11-15: AVMA Annual Convention
Seattle Washington.
<http://www.aaap.info>

2009

August

August 23-27: 17th European Symposium on Poultry Nutrition Edinburgh, Scotland. Online registration preferred
<http://www.espn2009.com/general-information/>

2009

September

September 17-18: The 81st Northeastern Conference on Avian Diseases (NECAD) will be held in conjunction with the **Pennsylvania Poultry Sales and Service Conference (PSSC)** on at the Holiday Inn - Grantville, Pennsylvania (Harrisburg Area / I-81 corridor). Titles for scientific presentations will be due on June 1 and abstracts due on September 1. Registration materials and a tentative program will be available shortly. Titles should be emailed to : pierson@vt.edu

2009

November

November 8-12: XVI Congress of the World Veterinary Poultry Association, Marrakesh/Morocco. Contact: [Prof. Mohomed El Houadfi](mailto:mhouadfi@iav.refer.org.ma), Moroccan Association of Avian Pathologists (AMPA), I.A.V. Hassan II, Department de Pathologie Aviaire, BP 6202, Rabat-Instituts. Phone: +212 (0)7 77 70 53, Fax: +212 (0)7 67 57 15, E-Mail: mhouadfi@iav.refer.org.ma, For more information, visit the website: [XVI WVPA Congress, Marrakesh 2009](http://XVIWVPACongressMarrakesh2009)

2010

April

April 20-23: VIV Europe 2010, Utrecht, The Netherlands. Contact: XNU Exhibitions Europe B.V, P.O. Box 8800, 3503 RV Utrecht, The Netherlands, Fax: +31 302-952-809; Website: www.viv.net



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Reminder

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