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WATT Egg Industry
News for the Egg Industry Worldwide

2009 IPE

Exhibitors present a common theme - efficiency

By Dr. Simon Shane

The 2009 International Poultry Exposition marked the return of the major manufacturers of cage installations and grading equipment who were absent in 2008.

The outstanding trend was an intensified interest in alternatives to cage systems prompted in part by the price premium for organic and cage-free eggs and recent events in California which may presage similar action in other states.

The international character of the IPE was clearly demonstrated with representation by manufacturers from the European Union in addition to attendees from four continents. Efficiency was the common theme with respect to equipment and services offered.

Sanovo Staalkat Optibreaker

A selection of innovations

The following products were noted for innovation or the potential for commercial application:

OvoPro EB 500

Further processing equipment generated interest consistent with the proportion of eggs marketed as liquid:

➤**Sanovo Staalkat** – Sanovo Staalkat displayed the OptiBreaker Range with models processing from 185 cph to 500 cph. OptiBreakers incorporate plastic cups which permit use of a sophisticated scanning system for quality control and CIP. (www.staalkat.com)

➤**OvoPro** – OvoPro added the model EB 500 Egg Breaking System to their range with a rated capacity of 500 cph. (www.ovopro.com)

➤**Diamond Moba Americas** – This new eponymous entity, created by acquisition displayed both Diamond Innova and Moba grading and packing installations on a single booth. Marketing and service of the two product lines has been consolidated with support from the Michigan and Pennsylvania Centers. (www.dma-group.com)

➤**Orka Food Technology** – Orka Food Technology displayed the Egg Shell Force Reader that determines egg strength and the Egg Analyzer which determines Haugh units and yolk color

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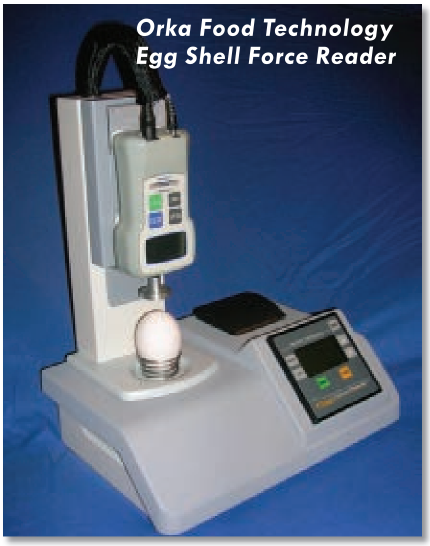


Orka Food Technology Egg Shell Force Reader

with electronic linkage to a database. (www.eggtester.com)

Manure composting

Composting poultry manure is gaining in popularity due to environmental restraints and the potential to generate additional revenue. Applicable products included:

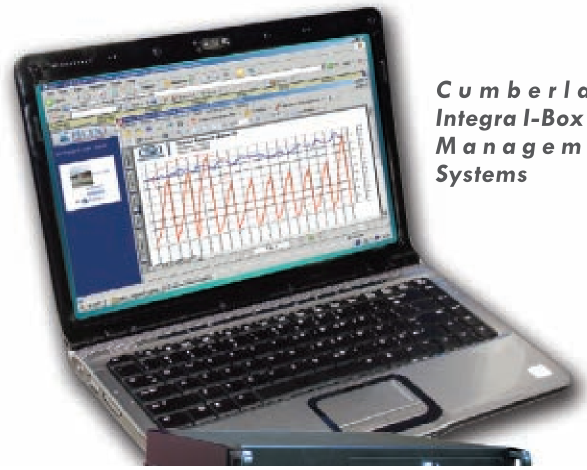
➤**Kohshin Engineering Installations** – Units on offer from this Japanese company are suitable for permanent installation in dedicated manure processing plants. (www.kohshin-s.jp)

➤**Farmer Automatic** – Supply Composters for operation in high-rise houses were displayed by Farmer Automatic. (www.farmerautomatic.com)

➤**Brown Bear Composting Agitator** – Brown Bear displayed a composting agitator unit that can be mounted on a tractor or skid loader to process litter in floor systems. (www.brownbearcorp.com)

➤**Nova-Tech Poultry Services Processor** – More than 400 of Nova-Tech units are now in operation for beak treatment using infrared technology and to inject vaccines by the subcutaneous route at a rate of 4,000 chicks per hour. (jims@nova-tech-eng.com)

➤**Cumberland Integra I-Box 360 Management Systems** – Cumberland's 360 module incorporates feed inventory and consumption records, ventilation control, environmental monitoring and video surveillance for management and verification of welfare. (www.cumberland-poultry.com)



Cumberland Integra I-Box 360 Management Systems

➤**Chore-Time** – The compay's first system comprising a multi-tier module with feeding, egg collection and manure belts was shown. (www.choretimeegg.com)

➤**Big Dutchman** – Big Dutchman showed their Colony 2+ slatted floor system, Natura and Natura Nova aviary units. (www.bigdutchmanusa.com)

➤**Vencomatic** – Floor and aviary systems conforming to international and U.S. welfare standards were displayed. (www.vencomatic.com)

➤**Volito** – This manufacturer presented a high density aviary module as used in the EU featuring nests on a single level among the perch modules. (www.volito.com)

➤**The Farmer Automatic Combi Layer Systems** – This Farmer multi-tier housing incorporates feeding, egg collection and manure removal systems similar to their range of cages. Also shown, a compatible rearing system to acclimate pullets to the laying environments. (www.farmerautomatic.com)

➤**Meller Anlagenbau** – Meller Anlagenbau showed their Kombi-laying-aviary available in three-tier and four-tier configurations. (www.meller.net)

Safety and inventory control

Trace back and inventory control will become more important as food safety regulations are intensified.

➤**BCS bv** – BCS bv demonstrated the Ovotrack integrated systems which extends from scanning at the farm level through processing and packing. (www.ovotrack.nl)

➤**Agro Systems** – Agro's Accucount module applied infrared technology to egg counting. (info@hytem.com)

Big Dutchman has also developed a similar unit with a feature that detects soiled eggs. **EI**

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Health of U.S. egg flocks

Owasyxlo | Dreamstime.com

Dr. Eric Gingrich of the University of Pennsylvania recently reported to the 2008 annual U.S. Animal Health Association Meeting on the current disease situation in U.S. egg-producing flocks. Based on a survey among members of the Association of Veterinarians in Egg Production, infection with *E. coli* responsible for peritonitis was classified as the most common condition among U.S. caged flocks.

Mycoplasma gallisepticum (MG) was cited as the second most important disease of concern followed by cannibalism and elevated chick mortality due to starve-outs.

Among floor-housed flocks, diseases of concern included colibacillosis and cannibalism, mite infestation, coccidiosis and round worms.

Vaccines, antibodies can be effective

Colibacillosis appears as either a primary infection leading to peritonitis and salpingitis (oviduct infection) or may be secondary to a respiratory infection including MG or bronchitis and may be exacerbated by inadequate ventilation leading to perceptible levels of ammonia.

Immunosupression resulting from exposure to IBD and Marek's disease virus may also be contributory factors. A live *E. coli* vaccine is apparently effective in reducing losses on farms which have problems with this infection.

Mycoplasmosis is controlled using live strain Ts-11 and 6/85 vaccines for mild strains of MG while F-strain is the vaccine of choice under conditions of severe challenge. Antibodies including tylosin and tetracycline are used to control *Mycoplasma* breaks and suppress secondary colibacilosis.

Osteomalacia and hypocalcemic tetany are occasionally encountered in first-cycle hens but most frequently second-cycle flocks fed inappropriately high levels of dietary calcium are affected. Excessive calcium intake suppresses the hormonal mechanisms responsible for hens to mobilize calcium from skeletal tissue.

Emerging problem - lighting

Cannibalism associated with improper beak treatment at 7 to 10 days continues as a problem drawing attention to the need to use appropriate templates and to control light intensity during the laying period. Exposing floor-housed flocks to light intensity of over 10 foot candles, common in unconverted broiler breeder houses, is an emerging problem.

Infection with *Salmonella Enteritidis* is still a concern in the industry especially in view of the proposed FDA rule introduced in 2004 and subject to recent comments and review.

Issues which have yet to be resolved include laboratory procedures to verify both environmental and flock infection, funding and compensation in the event of diversion of eggs and procedures to decontaminate houses following depletion of infected flocks.

ILT appears to be controlled

Among the respiratory diseases, infectious laryngotracheitis appear to be well-controlled but the pox-vectored recombinant ILT vaccine is less effective than chick embryo origin vaccine in this respect. The HVT-vectored ILT vaccine is currently under evaluation but in areas where it has been used it has been shown to be effective.

AI continues as a concern

Avian influenza represents a continuing concern since the highly pathogenic H5N1 strain has become endemic in Southeast Asia and regions of Africa. At this time, control measures include preventing introduction of infection into the continent of America by movement of personnel or illegal importation of live birds and products.

Active and passive surveillance for low pathogenic AI continues but there are questions regarding control measures which obviously will disrupt ongoing egg production operations and the movement of product.

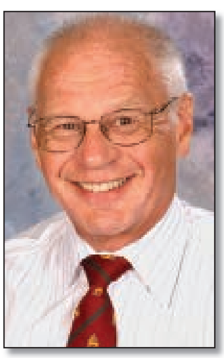
The National Poultry Improvement Plan functions effectively to prevent low pathogenic avian influenza in commercial egg production flocks thus potentially reducing the impact of this disease on the U.S. industry.

The U.S. Animal Health Association is a valuable forum for reviewing issues of concern and provides regulatory veterinarians with current information on economic and practical issues affecting the control of poultry diseases. EI

IPE: Education, innovations and communication

The 2009 International Poultry Exposition and associated educational program organized by the U.S. Poultry and Egg Association are reviewed in this edition of ***Egg Industry***. This annual event is a significant opportunity for communication within our industry. Manufacturers and suppliers demonstrate to prospective clients their innovations in equipment, vaccines, dietary additives, pharmaceuticals and services.

USPOULTRY arranges programs which allow top policy makers and research scientists to present data and to provide opinions on future developments which affect both productivity and profitability.



Simon Shane

For a number of years USPOULTRY has facilitated the joint meeting of the Southern Poultry Science Society and the Southern Conference on Avian Diseases now constituted as the International Poultry Scientific Forum (IPSF) which precedes the IPE.

Most of the U.S. poultry associations including the UEP, AAAP and specialty groups within the American Veterinarian Association confer and conduct business during the five-day period.

Reports on the scientific program of the IPSF and innovations displayed on the IPE floor are reviewed in this edition.

Exhibitors return

The return of a number of cage and equipment exhibitors who withdrew from the IPE in 2008 is welcome and attests to the importance of this event as a world-class exhibition with impact beyond North America.

USPOULTRY is commended for its continuing efforts to improve the IPE and affiliated programs and to apply the excess funds to support research and promote the industry.

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IPSF presentations

New research to increase productivity, profitability

By Dr. Simon Shane

The International Poultry Scientific Forum which precedes the IPE provides scientists with an annual opportunity to present their latest research.

The following reports have been selected for interpretive review on the basis of their potential to contribute to enhanced productivity and profitability:

DDGS in Pullet Diets (P180) – Dried Distiller's Grains conforming to uniform and consistent quality can be incorporated into pullet diets at a level of 12% without any adverse effect on growth rate or body mass

Reducing Trace Mineral Intake (P189) – Approximately 75% of NRC requirements for zinc and manganese can be replaced by a commercial organic mineral formulation in pullet diets without a negative effect on weight gain but with a corresponding reduction in mineral excretion.

Yolk Color Enhancement (P221) – Biomass from a culture of Rubrivivax gelatinosus which contains oxycarotenoids can increase the redness of yolks. In contrast to marigold extract, this bacterial source does not impart any yellow color resulting in an orange hue in yolks.

Feed conversion and egg weight were not affected by the supplement but feed intake increased significantly in diets supplemented with the bacterial-source additive.

Pecan Shell Product for Molting Diets (P188) – A commercially available byproduct of pecan processing was incorporated in molt diets at various levels ranging from 3% to 15%,

Weight loss during the seven day trial period was proportional to inclusion level (15% to 27%) and egg production ceased when hens were fed diets with more than 9% of the Pecan Natural Fiber ingredient.

Use of pecan shell to induce molt will in all probability be more expensive than alternative fillers including wheat middlings and soy hulls which are cheaper than the suggested $200/ton price for pecan shell material.

Staging of Fans and Airflow (T93) – when designating extraction fans mounted in the gable walls of houses to consecutive stages for ventilation, it is preferable to select center-placed rather than outer fans. The use of center-mounted pairs of fans improves the uniformity of airflow along side walls and aisles. This has an impact on air temperature and it may reduce power requirement for equivalent volumes of air displacement.

Feeding Space for Broiler Breeders (T90) – Trials conducted in Turkey on broiler breeders showed that reducing feeder space from 7 inches to 5 inches per mature hen reduced floor eggs by 5% but with no adverse effect on performance parameters including egg production and livability.

These results may be of significance in relation to current concerns over unrealistically liberal space requirements required by organizations certifying welfare. Trough space requirements cannot be established in isolation without considering frequency of feeding, speed of the feeder chain, depth of feed in the trough, synchronization of lighting and feeding programs and the housing of pullet flocks prior to transfer.

AI Virus Recovery from Eggs (T131) – Low-pathogenicity AI virus was introduced into eggs which were placed in composting litter to determine survival. Viability of virus persists in eggs for 72 hours when held at 60 F.

In contrast, virus was destroyed in 54 hours when eggs were placed in composting litter at 140 F and at 100% relative humidity. These results have relevance to control measures imposed by state and federal authorities following outbreaks of avian influenza.

Determination of Salmonella Persistence on Shells and Outer and Inner Shell Membranes (P153) – A study was conducted on breeder eggs showing that contamination of shell surfaces with a culture of salmonella resulted in penetration through the pores within two hours.

This study indicates the importance of reducing floor eggs and prompt collection and segregation of floor eggs from nest eggs in cage-free housing. If salmonella from feces or litter penetrates the shell, subsequent decontamination in the plant will not destroy the organisms within the egg.

Refrigeration before and after packing is necessary to suppress proliferation of Salmonella in order to reduce the risk of food borne infection to consumers.

Differentiation among SE Isolates (T143) – The introduction of RAPD-PCR technology now allows differentiation among SE strains. Failure to distinguishing among isolates of SE using conventional PFGE is a limitation in the epidemiologic investigations of outbreaks. The new technique will allow public health investigators to positively identify source flocks. This has obvious regulatory and legal significance.

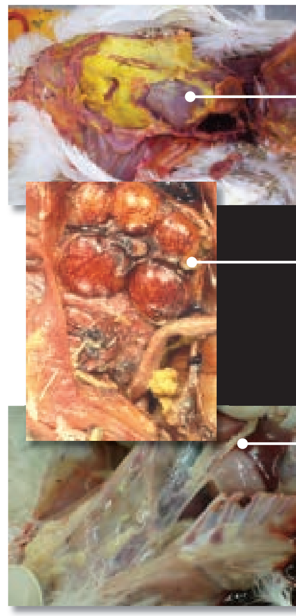
Selection of MG Vaccines (P155) – Mycoplasma gallisepticum (MG) ts-11 vaccine can be used as a primer in 10-week old pullets which are subsequently vaccinated with the more pathogenic F-strain live MG vaccine at either 22 or 45 weeks of age. This program has no effect on blood parameters or performance of hens.

Protection results from stimulating an antibody response against MG. It was also determined that F-strain MG will not spread from vaccinates to contact birds when administered by the spray route. In contrast the administration of F-strain vaccine by the eye-drop route results in shedding. EI

Copies of abstracts are available from Egg Industry on request. Please quote the number and title in an e-mail to Editor Simon Shane at sshane@nc.rr.com.

Impact of *E. coli* on profitable egg production

By Dr. Simon Shane



Caseous peritonitis in a hen infected with APEC

Oophoritis (inflamation of the ovary) and peritonitis due to APEC.

Airsacculitis due to APEC frequently follows exposure to MG, possibly MS and viral respiratory infections including IB and ILT

During the past five years, segments of the U.S. egg production industry have been impacted by elevated flock mortality due to peritonitis. In addition, many operations continue to experience erosive losses from airsacculitis due to secondary ***E. coli*** infection following exposure to ***Mycoplasma gallisepticum*** (MG) and viral respiratory pathogens including infectious bronchitis (IB), lentogenic Newcastle disease (ND) and laryngotracheitis (LT).

The common factor in primary and secondary infections is a range of disease-causing *E. coli* strains collectively termed *Avian Pathogenic E. coli* (*APEC*). Although *E. coli* is commonly found in poultry houses and is a normal component of intestinal flora, some strains have developed an increased capacity to cause disease. This is usually associated with genetic determinants located on a virulence plasmid.

Various strains of *E. coli* are associated with omphalitis which results in elevated chick mortality. A high prevalence of this condition usually denotes a deficiency in hygiene extending through the chain of production from breeder flocks to chick handling. Omphalitis is believed to be unrelated to the subsequent occurrence of either primary peritonitis or secondary airsacculitis.

Coliform bacteria are present in the feces of all flocks and become suspended in the airborne dust of poultry houses with both floor and caged-housed flocks.

Studies have documented over a million *E. coli* organisms per gram of dust especially in controlled-environment cage houses operated at low humidity levels which occur during winter in the Midwest. Contaminated water supplied to flocks is frequently implicated in *APEC* infection. Rodent droppings also may be heavily contaminated with *E. coli* and can be ingested from feed troughs.

Immunosuppression contributes to *APEC*

Immunosuppression is an important contributor to the prevalence and severity of *APEC* infection. Flocks which are exposed to immunosuppressive viruses during the early brooding period or are subjected to environmental stress or mycotoxins are unable to establish an effective cellular response resulting in failure to engulf and inactivate *APEC* at the point of entry in the respiratory, intestinal and reproductive tracts. The production of antibodies against *APEC* in immunosuppressed flocks is less efficient compared to flocks with an intact immune response.

This manifestation of *APEC* infection emerged among in-line operations in the Midwest during the mid-1990s. The condition can cause up to 15% losses after peak production. Flocks may also show *APEC peritonitis* when molting and through onset of the second cycle of production. Erosive mortality under 2% over a few weeks is not generally recognized as *APEC peritonitis* unless routine post-mortem examinations are performed. In severe and recurrent episodes with cumulative flock mortality exceeding 10%, structured necropsy surveys will reveal the cause of losses

The pathogenesis of the condition has not been determined but it is assumed that

TABLE 1. ASSUMPTIONS APPLIED TO CALCULATING LOSSES FROM *E. COLI* INFECTION IN CAGED FLOCKS

Assumptions Relating to Standard Caged Flock:		
Achievable Egg Production*	1st Cycle 260 eggs 20-65 weeks 2nd Cycle 140 eggs 70-100 weeks	
Mortality*	1st Cycle 3% 2nd Cycle 2%	
	Nest run average revenue	100¢/dozen
	Assumed production cost (45¢ feed + 25¢ other) =	70¢/dozen
	Contribution margin	30¢/dozen

*Based on Breeders' Management guides for Leghorn hybrids

The loss of the equivalent of one dozen eggs per hen due to post-peak mortality in the flock of 100,000 hens would amount to $27,000 over two cycles.

inhalation of dust contaminated with *APEC* results in deposition of the organism in the abdominal air sacs. Local infection extends to the adjacent peritoneal surfaces and the serosal membranes surrounding the intestines, liver and reproductive tract, culminating in extensive peritonitis.

During the acute phase of infection, mortality increases from a normal level of less than 0.15% per week to over 1.5% per week. Most of the mortality comprises hens which are well fleshed, indicating the rapid onset of the infection and the development of acute septicemia. Characteristic lesions are obvious on examination. Flocks affected at or following peak production frequently show persistent elevated mortality.

Secondary *APEC airsacculitis*

Susceptible flocks which are exposed to respiratory pathogens including MG, ND, IB, LT and coryza, where prevalent, frequently develop secondary airsacculitis and septicemia as a result of *APEC* infection. The severity of the primary infection is influenced by the effectiveness of previous vaccinations, immune status, ventilation, environmental stress and nutrition. Pullet or mature hen flocks may show up to 10% losses. Generally, affected flocks develop secondary airsacculitis approximately one to two weeks after an obvious clinical infection characterized by respiratory rales (gasping and snicking) and if in lay, a depression in hen-week production. Postmortem changes are obvious, involving caseous deposits in the abdominal and sometimes the thoracic air sacs. Post mortem examinations may also show concurrent peritonitis.

APEC salpingitis

Floor-housed hens and occasionally cage-housed flocks may show salpingitis (infection of the oviduct) late in the first cycle and during the second cycle. In caged flocks, affected hens will frequently die during molting or are culled at the onset of molt, consistent with good production practice.

Affected hens are emaciated and are out of production as denoted by shrunken combs and contracted pelvic conformation. Post-mortem examination reveals gross distention of the oviduct with caseous material and the condition is frequently associated with peritonitis and the presence of degenerating yolks in the body cavity.

Treatment of *APEC* infections

Flocks showing primary respiratory infection can be treated with one of the limited range of approved antibiotics for hens producing table eggs applying the FDA Prudent Use Principles. Drugs can be administered in either drinking water or feed in accordance with statutory label requirements.

Attempting to treat mature flocks with antibiotics is often unproductive and unjustified on a cost-to-effectiveness evaluation. Some success has been achieved in reducing mortality in pullet and young hen flocks by administration of mannanoligosaccharide feed supplements. These compounds function as prebiotics and stimulate tissue immunity in the intestinal tract.

Financial impact of *APEC peritonitis*

Financial losses associated with an episode of *APEC peritonitis* can be calculated using realistic assumptions related to standard production and mortality characteristic of infection. TABLE 1 documents the assumptions applied to calculating losses in a caged flock, including projections of egg production during the first and second cycles, standard mortality, nest-run average revenue of $1 per dozen and an assumed production cost of 70 cents per dozen.

In the specific example it is assumed that *APEC* mortality in the flock attains 5% by week 45 of production. It is calculated that a flock of 100,000 hens would lose approximately five eggs per hen on average during the first cycle and seven eggs during the second cycle following earlier mortality.

Adjusting costs of production to exclude the feed which would have been consumed by dead hens and altering the contribution margin accordingly, the loss of the equivalent of one dozen eggs per hen due to post-peak mortality in the flock of 100,000 hens would amount to $27,000 over two cycles. If losses due to *APEC peritonitis* occurred during molting, the loss during the 30-week second cycle in a flock of 97,000 hens would be $15,277. See TABLE 2.

Airsacculitis and septicemia following secondary *APEC* infection could result in 2% mortality as shown in the example documented in TABLE 3. Losses in an affected flock of 100,000 hens started would amount to the equivalent of 14 eggs per hen spread over the entire production period, attaining a value of $32,141.

Infection of pullets with *APEC* during the mid to second half of the growing cycle might result in a cumulative mortality of 2%. With

TABLE 2. CALCULATION OF LOSSES ATTRIBUTABLE TO *E. COLI* PERITONITIS

Cost of *E. coli peritonitis* resulting in mortality in 100,000 hen flock 5% mortality 45 weeks to 50 weeks
Total eggs lost per hen over entire flock 1st Cycle = 5 eggs 2nd Cycle = 7 eggs
Decreased margin allowing for feed adjustment for dead hens: $0.27/dozen x 12/12 eggs x 100,000 = $27,000
Loss with occurrence due to stress of molting (70-100 weeks) Eggs lost in 2nd cycle: $0.27/dozen x 7/12 x 97,000 = $15,277

During molting, losses due to APEC peritonitis in the 30-week second cycle in a flock of 97,000 hens would be $15,277.

a unit cost of $3.50 per bird the loss for a flock of 100,000 chicks started would be $7,000. Generally flocks affected with respiratory disease and secondary *APEC airsacculitis* show a proportion of pullets that are retarded in development and onset of production can be delayed by four weeks for up to 5% of the flock.

This may result in the loss of 12 eggs per affected hen or 0.6 eggs per hen averaged over the entire flock, amounting to $1,500. If pullets which die during rearing cannot be replaced with surplus hens, the 2% loss will result in a decrease in contribution margin from the 2,000 fewer hens placed. The flock operator would carry the same fixed costs but would not bear the depreciation cost from pullets purchased or feed consumed. The loss of these potentially producing hens would depress average flock yield by eight eggs per hen for a total of $18,366. See TABLE 3.

Prevention of *APEC peritonitis*

Programs which have been implemented in Midwest in-line operations are based on a presumed understanding of the causation and pathogenesis of the condition. Required measures relate to improving hygiene and biosecurity and protection of flocks from infection by vaccination.

Chlorination of drinking water to a level of 2 ppm at the point of entry to the house is a recommended practice irrespective of the *E. coli* status of the source.

Drinking lines should be flushed and biofilm removed with an acid detergent. Ventilation must be upgraded to acceptable production standards to suppress ammonia below 20 ppm for any period exceeding two hours.

Under conditions of extremely low humidity (30%) functional evaporative pads or ultra-high pressure fogging systems can be activated for short periods to raise humidity while maintaining a low rate of air flow.

Adequate air movement is critical to reduce accumulation of ammonia, carbon dioxide, and dust which stress the respiratory tract. Blowing dust from walkways and other house surfaces using compressed air or gasoline powered leaf-blowers should be stopped. Dispersing dust laden with *APEC* into the air of the house increases the level of exposure of flocks to respiratory infection.

Rodent suppression should be intensified to reduce contamination of the environment of hens with aerosolized *APEC* shed in droppings.

E. coli vaccination

Flocks of both caged and floor-housed hens in locations historically affected with *APEC salpingitis*, peritonitis, and airsacculitis have been previously vaccinated with a homologous-strain autogenous inactivated vaccine. These products are expensive to produce, require individual administration by injection and have variable effectiveness given the variety of *APEC* strains to which flocks may be exposed.

Advances in molecular biological technology have facilitated the production of gene-deleted bacterial pathogens including *APEC* strains. These vaccine strains lack pathogenicity and do not revert to virulence but can stimulate local tissue (cellular) immunity and humoral (circulating antibody) immunity. The first USDA licensed *E. coli* vaccine for chickens is based on an O78 strain of *APEC* which was modified to delete the aroA gene necessary for metabolism of cyclic amino acids.

Poulvac E. coli, manufactured by Fort Dodge Animal Health, has been used to suppress various forms of *APEC* infection in the U.S. egg industry. The vaccine should be administered within the first three weeks of age by the coarse spray route. The second dose should be administered at approximately 12 to 14 weeks of age as a booster. Extra-label administration by the coarse spray route has been used by some companies when initiating molting to protect flocks during the second cycle.

Experimental data submitted to the U.S. Department of Agriculture to support registration, and subsequent field evaluation have confirmed the efficacy of the vaccine. Given an approximate cost of $10 per 1,000 doses, a producer would invest $2,000 in vaccinating a flock of 100,000 pullets. If successive outbreaks of *APEC peritonitis* generate losses of $30,000 per flock, vaccination provides a potential benefit-to-cost ratio of 15:1. Suppressing airsacculitis mortality in pullets would provide a benefit to cost ratio of 8:1.

General practice is to administer *E. coli* vaccine to floor-housed pullets since their value at the time of placement, especially if reared according to organic rules, obviously justifies protection. Floor-housed flocks producing eggs for the organic and the non-confined markets generate a proportionately higher contribution margin than caged-housed hens and the attenuated gene-deleted live *E. coli* vaccine would generate a higher return especially with a history of peritonitis or airsacculitis in previous flocks.

The assumptions used in TABLE 1 for a caged flock and the projection of contribution margin as influenced by market factors as shown in TABLE 2 and TABLE 3 can be changed to suit specific market and production situations. The justification for protection against *APEC peritonitis* and *airsacculitis* increases proportionally to the value of flocks and contribution margin. **EI**

TABLE 3. CALCULATION OF LOSSES ATTRIBUTABLE TO *E. COLI*
Cost of *E. coli airsacculitis* secondary to immunosuppression, followed by exposure to MG, IB, ILT: 2% mortality with onset at 30 weeks of age
Total eggs lost/hen over entire flock 1st & 2nd Cycles = 14
Decreased margin allowing for feed adjustment for dead hens: $0.29/dozen x 14/12 x 95,000 = $32,141
If pullets are affected: Mortality of 2% @ $3.50 with 100,000 flock = $7,000
Delay in onset of production of 4 weeks in 5% of flock Results in loss of 12 eggs/affected hen or an average of 0.6 eggs over flock Loss value = $.30 x 0.6/12 x 100,000 = $1,500
Loss of revenue arising from death of pullets: 2% loss placed = 2,000 hens with potential of 400 eggs or 8 eggs over flock Loss per dozen = $.29 x 8/12 x 95,000 = $18,366

The loss of potentially producing hens would depress average flock yield by eight eggs per hen for a total of $18,366.

➤INDUSTRYNEWS

➤Free Online Interactive Forum on Animal Nutrition and Health

WATT will offer the first Interactive Forum on Animal Nutrition and Health featuring current topics and presenting the views of prominent specialists in nutrition, health, production and economics on April 29.

Greg Watt, WATT president and CEO, stated, "We wanted to provide the ultimate online experience platform for the global animal agribusiness community." The Forum will allow participants to communicate in real-time with experts in diverse fields and permit instant messaging, e-mails and the exchange of electronic business cards.

The initiative of WATT coupled with advances in technology will provide a forum in which agribusiness professionals can participate from anywhere in the world.

The Forum will be held over one day but will be archived and available on demand for 90 days for the convenience of those who were not able to attend the live event.

For details or to register for the free event, go to www.wattevents.com.

➤Industry favoring manure belt batteries

In a presentation at a UEP meeting concurrent with the IPE in Atlanta, Tom Lippi of Chore-Time Egg Production Systems provided data on the selection by producers from among alternative cage systems in 2008.

The dominance of manure belt installations is shown in the following table:

It is noted that A-Frame curtain deflector cages have declined in proportion of deliveries from 80% in 1998 to a 2008 total of 20% for cages with either curtain or board deflectors. In contrast manure belt cages have increased from 10% of the market in 1998 to 73% in 2008.

This is attributed to a number of factors including:

✔Increasing the density of existing high-rise houses by retrofitting.

✔Compliance with environmental manure disposal regulations.

✔Lower cost of rodent/fly control.

✔Compliance with ammonia standards for welfare.

✔Durability/extended operational life.

Type of Cage	Percentage of Total Delivered
A-Frame with Curtain deflectors	5%
A-Frame with Board deflectors	10%
Vertical Cage with Droppings Boards	12%
Manure Belt	73%

The primary consideration for adoption of manure belt batteries relates to lower cost per hen housed in either retrofit or new installations.

High density manure belt batteries do however require more sophisticated ventilation, environmental monitoring and alarm systems. EI

MARKETPLACE

Ad sizes start at one column by one inch and can be any size up to six column inches. Logos and photographs are acceptable. Add color for an additional $30 per color per insertion. The rate for **EGG INDUSTRY** is $120 per inch per insertion (1-time rate), $110 per inch per insertion (6-time rate), and $100 per inch per insertion (12-time rate). The production charge is included except for ads with excessive make-up demands.

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