

115th ANNIVERSARY Egg Industry

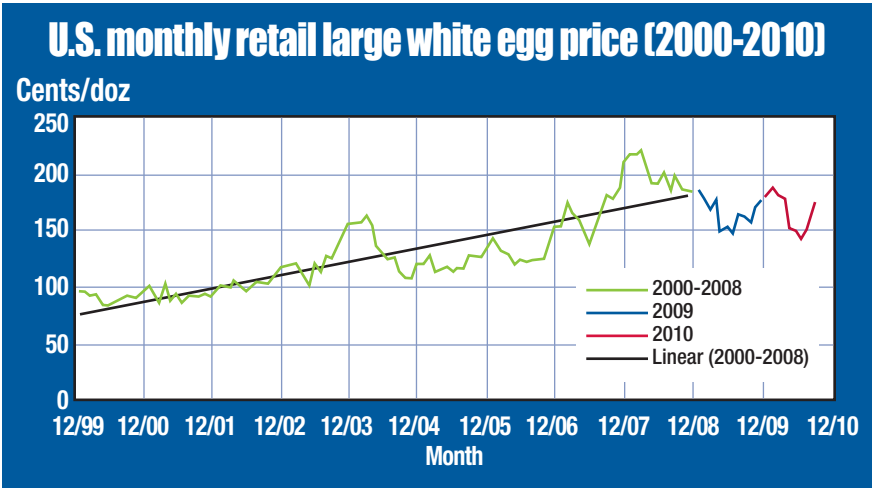
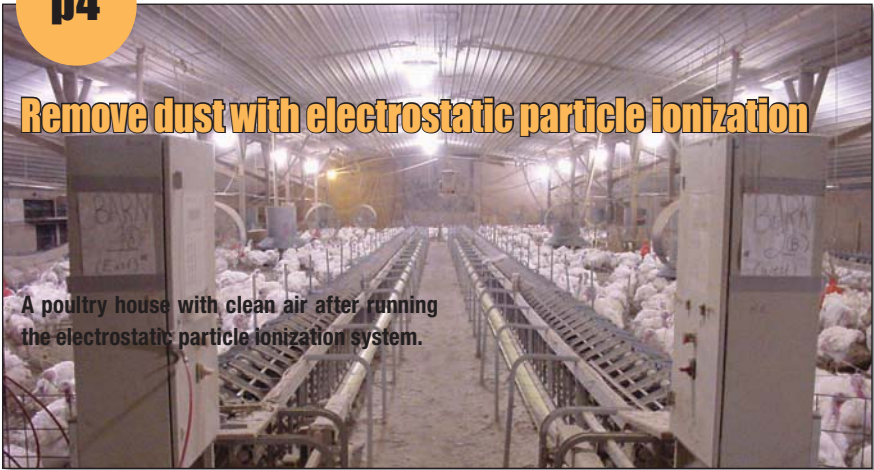
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In August, the University of California projected an UB large Midwest price of 117.3 cents/dozen for September, which was depressed to 89.7 cents per dozen as a result of the SE recall. A rapid rise occurred during October to achieve an average of 101.9 cents per dozen.



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A scene from the 2010 IPE/IFE.

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EDITORIAL

BY DR. SIMON M. SHANE

Egg prices level out, but industry now facing new challenges

Well, we appear to be back to the UB price projected before the August SE recall. This is due in part to the shifting of media reports from SE to the November midterm elections, the absence of additional recalls (other than a single small event announced on November 5), the sharp decline in incident cases reducing the frequency of releases by the FDA, positive publicity by the AEB and the depletion of possibly 4 to 5 million hens.



Simon M. Shane

The UEP has announced an initiative to address prevention of SE. This is commendable but late. Their belated action parallels the response of producers in the UK in developing the "British Lion" program. This was only developed and implemented after the Junior Minister of Health, Edwina Currie torpedoed egg consumption in 1988 in that nation by public statements on salmonella infection gaining her the sobriquet of "Eggwina". It would be uncharitable to question the intentions or commitment of the UEP but to quote Macbeth, "Then 'twere well it were done quickly." Any of a number of practicing poultry health specialist veterinarians could tell the industry what to do today, least of all when the 5-Star Total Quality Assurance Food Safety Program was originally rolled out. The same can be said for the SQF certification program which ignores the fact that SE is egg-borne. To make the "S" in SQF more "Safety" than "Superficial," plant management must confirm the SE-free status of

supply flocks before purchasing or processing eggs.

Now that much of the dust (presumably contaminated) has settled, it would be appropriate to predict some of the realities facing the industry. These include:

- ✓ Increased scrutiny by the FDA or even a unified federal food safety agency;
- ✓ Adverse publicity from additional recalls;
- ✓ Intensified opposition from the HSUS regarding caged housing using SE as a justification for a ban at the state or federal levels; and
- ✓ The possibility that SE will become the "new cholesterol" as a restraint to increased consumption.

There are a number of technical opportunities which will emerge from the 2010 fiasco which will contribute to the production of eggs free of SE:

- More effective (sensitive and specific) diagnostic procedures including PCR;
- Realistic adoption of effective biosecurity;
- ✓ Upgrading immunization and quantifying immune response;
- ✓ Enhanced QC and monitoring of the environment of flocks;
- ✓ Positive trace-back through the complete chain of production; and
- ✓ Application of epidemiologic principles by trained professionals to suppress SE and less concern for minimizing cost and adhering to traditional and outmoded production practices.

As usual contrary opinions are welcome.

Wishing all the readers and supporters of Egg Industry the compliments of the season and looking forward to a less turbulent and profitable 2011.

EggIndustry

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CORPORATE HEADQUARTERS

WATT

303 N. Main St., Ste. 500
Rockford, Illinois 61101-1018 USA
Tel: +1 815 966 5400; Fax: +1 815 968 0941

V.P./Publisher:

Steve Akins, sakins@wattnet.net
Tel: +1 919 387 7961; Fax: +1 815 968 0941

V.P./Director of Content:

Bruce Plantz, bplantz@wattnet.net

EDITOR

Editor: Simon M Shane
sshane@wattnet.net Tel: +1 919 806 8695

COPY DESK TEAM

Managing Content Editor: Ken Jennison
Community Manager/
SEO Editor: Kathleen McLaughlin
Senior Content Editor: Tara Leitner
Associate Editor: Lindsay Beaton
Associate Editor: Kayla Kling
Associate Editor: Andrea Saladino

ART/PRODUCTION TEAM

Senior Art Director: Tess Stukenberg
Production Director: Bill Spranger
bspranger@wattnet.net Tel: +1 815 966 5428
Advertising Production
Coordinator: Connie Miller

SALES TEAM

USA/Canada

Pam Ballard, pballard@wattnet.net
Tel: +1 815 966 5576; Fax: +1 815 968 0941
Ginny Stadel, gstadel@wattnet.net
Tel: +1 815 966 5591; Fax: +1 815 968 0941

International

Frans Willem van Beeman,
beemenfw@xs4all.nl; Tel: +31 344 653 442
Fax: +31 344 653 261
Michael van den Dries,
driesmvd@xs4all.nl; Tel: +31 79 323 0782
Fax: +31 79 323 0783
Tineke van Spanje, spanje@xs4all.nl
Tel: +31 495 526 155; Fax: +31 495 525 126

Southeast Asia

Dingding Li, dingdingli@vip.163.com
Tel: +86 21 541 36853, Fax: +86 21 541 33676

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Simon

sshane@wattnet.net

Remove dust with electrostatic particle ionization

System reduces dust inhalation and lowers levels of ammonia

By Simon M. Shane

BEI Ag Solutions markets an electrostatic particle ionization system to remove entrained dust from the air in poultry houses. The principle of its installation involves charging parallel electric lines which run the length of a house, which effectively “flood” the atmosphere with negative ions resulting in the deposit of dust particles on surfaces within the house.

Environmental mandates to lower release of dust from houses in close proximity to dwellings. According to Matthew Baumgartner, general manager of BEI, an installation in a house approximately 33,000 sq. ft. in extent would cost \$20,000 and would require four lines with their individual ion generators. An annual operat-

ing to BEI. Displacement using a leaf blower will be deleterious since mobilization of the precipitated dust would result in inhalation and predispose the flocks to airsacculitis and peritonitis. In the Ohio installation, the longitudinal wires generating negative ions were lo-

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After running the BEI Ag Solutions electrostatic particle ionization system.

The system was devised principally to limit environmental pollution and has been extensively evaluated in British Columbia, Canada, for broiler and turkey growing houses. The reduction in dust inhaled by flocks together with lower levels of ammonia with restricted ventilation rates may also contribute to improved growth, livability, feed conversion efficiency and hence, profitability.

The system has been installed in layer houses in Ohio in response to en-

vironmental mandates to lower release of dust from houses in close proximity to dwellings. According to Matthew Baumgartner, general manager of BEI, an installation in a house approximately 33,000 sq. ft. in extent would cost \$20,000 and would require four lines with their individual ion generators. An annual operat-

ing cost of \$5,000 was assumed to cover depreciation at 15% p.a. with interest at 7% and a provision for utilities, maintenance and other expenditures of \$600 per annum. Breaking even can be achieved by raising production by an additional 0.6% during the six months of year when atmospheric dust and ammonia are a problem due to reduced ventilation rates. This calculation is based on a flock of 130,000 hens with 76% hen-to-pack yield and a revenue of \$1 per dozen.



Before running the BEI Ag Solutions electrostatic particle ionization system.

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Dust that is precipitated by the system will accumulate on all surfaces, including the structure and cages, according to BEI. Displacement using a leaf blower will be deleterious since mobilization of the precipitated dust would result in inhalation and predispose the flocks to airsacculitis and peritonitis. In the Ohio installation, the longitudinal wires generating negative ions were located beneath the cages. This arrangement allowed dust entrained in the air exhausted from the house to be deposited in pits. An alternative but more expensive approach would be to exhaust air into a precipitation and heat exchange chamber which could then separate dust particles and re-circulate clean warm air into the house. This principle has been applied in incubators to remove fluff under experimental conditions. A similar method has been used to temper air by removing dust and adding moisture in a broiler operation located on a dry highland plateau. Broiler performance in this location was severely impacted by respiratory disease exacerbated by a combination of dust and low humidity.

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CEVA makes way for vector vaccines with recent symposium

Advanced vaccine generates immunity without the disadvantages of traditional vaccines

By Ken Rudd, BioBusiness Consultants

CEVA Animal Health organized the Vector Vaccines Symposium, which took place from October 6-8 in San Diego, Calif. The symposium, which attracted over 300 attendees, included presentations by CEVA's scientists in addition to U.S. and EU research workers affiliated to universities and veterinarians involved in poultry health.

Advantages of vector vaccines

Live attenuated viral vaccines have served as the mainstay of disease prevention in the poultry industry for the past 50 years. Problems associated with undesirable post-vaccination reactions, extensive spread of vaccine strains such as chick embryo-origin ILT in the U.S. broiler industry, emergence of IBD variants as well as the remote possibility of reversion are significant issues with this class of vaccines. The strategy of using mild live vaccines to prime the immune system followed by less attenuated live vaccines and then administration of inactivated emulsions vaccines is generally adopted by egg and chick producers for rearing long-lived flocks. The use of inactivated vaccines in parent stock can give rise to tolerance



Opening session of the CEVA Vector Vaccines Symposium.

specific pathogens were incorporated into the genome of non-pathogenic viruses. Administration of the modified vector vaccine induces immunity without the obvious disadvantages associated with traditional live attenuated products.

The first pox virus-vectored vaccines proved highly effective against Newcastle disease and avian influenza when administered to specific pathogen-free chicks. Unfortunately, in some situations maternal antibody against some of the inserts or the vector inhibited durable protection under field conditions. Notwithstanding this problem, successful results have been obtained in Mexico controlling avian influenza and Newcastle disease with appropriate modifications to parent vaccination programs.

Dr. Robert Webster of St. Jude's Hospital, a world-renowned expert on human influenza, emphasized the need to adapt vector technology to controlling influenza in human populations. Reli-

ance on embryonated eggs to propagate influenza vaccines for humans is costly and is associated with risks of inducing sensitivity reactions in vaccine recipients. He stressed that effective control of avian influenza in poultry populations is essential in preventing the emergence of new strains which may be pathogenic to human populations.

The reluctance of regulatory authorities to accept this new technology when originally presented for licensing inhibited commercialization and adoption of vector vaccines. Dr. Kristi Moore, the vice president of research and development at CEVA-Biomune USA, indicated that the Center for Veterinary Biologics has classified genetically modified products into three categories. These include:

- ✓ DNA subunit vaccines,
- ✓ gene deleted vaccines and
- ✓ vector vaccines.

At the present time, only HVT and pox are used as vectors, but it is possible that other viral and bacterial candidates may

Current health of U.S. egg production flocks

www.WATTAgNet.com/17114.html

and attaining a satisfactory level of acquired immunity in young progeny is an ongoing problem due to maternal body interference.

During the 1970s, advanced in biotechnology gave rise to a new class of vaccines. Sequences of DNA, coding for immunogenic antigens associated with

be selected. Requirements for registration of vector vaccines include safety, efficacy equivalent to or superior to current conventional products, absence of reversion under field conditions, and non-spreading between vaccinated and non-vaccinated contacts. Vector vaccines have been shown to stimulate both cellular and humoral immunity.

A major advantage of vector vaccines is the ability to implement the DIVA Principle which can be used to differentiate infected from vaccinated subjects. This is critical in diagnosing the presence of an infection in a population or area and to certify that populations which have been vaccinated and demonstrate antibody are in fact free of infection.

Dr. Thierry van den Berg, director of the Veterinary and Agrichemical Research Center in Belgium, reviewed experiments to control Newcastle disease (ND). The most efficient program involved administration of HVT-vectored vaccine at 18 days of incubation by in ovo injection followed by administration of a lentogenic live attenuated ND product adjuvanted with chitosan using the

aerosol route at the hatchery. This program was more effective than using either HVT-vectored ND alone or relying only on live ND vaccine in the face of high challenge under experimental conditions.

Vaccine differences

There are differences among vaccine constructs as demonstrated by Dr. Jack Rosenberger using two different HVT-ND vector vaccines against ND challenge, reflecting conditions in the Delmarva area. Substituting live attenuated ND vaccine with an HVT-ND vectored vaccine improved the field performance of broilers, according to Dr. Tom Holder. Part of the benefit was attributed to the fact that the deleterious effect from a combination ND-IB (infectious bronchitis) vaccine was eliminated.

It is well documented that there is mutual interference when administering combination live attenuated ND-IB vaccines, resulting in subsequent susceptibility to infectious bronchitis. Since in ovo vaccination is an established practice in the broiler industry in the U.S., in-

corporation of vector vaccines based on HVT is perfectly acceptable and imposes no departure from existing practices in an intensively conservative and price-conscious industry.

An HVT vectored infectious bursal disease (IBD) vaccine was used by Dr. Gregg Cutler to control the only documented outbreak of very virulent IBD in the U.S. Initially, an intermediate plus IBD vaccine was used on an off-label basis to control the clinical outbreak and to limit spread. Thereafter D78 strain vaccine was administered with transition to HVT-IBD vaccine in conjunction with intermediate D78 strain. The combination of vaccines effectively eradicated infection.

Dr. Carlos Barranon of PATSA, a broiler integrator in Mexico, described the successful use of a pox/ILT product to control laryngotracheitis (ILT) in flocks. The pox-vectored ILT vaccine effectively eliminated field virus and was more successful than either tissue culture or chick embryo origin live attenuated LT vaccines. It is noted that virtually all ILT clinical outbreaks among broilers in the

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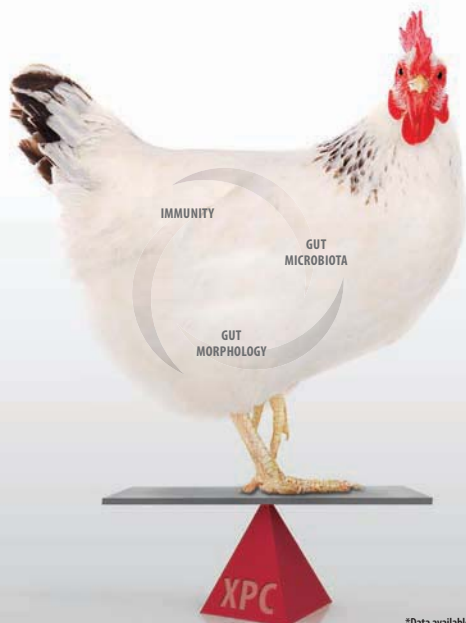
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U.S. can be ascribed to CEO live attenuated chick embryo origin ILT vaccines which have undergone field reversion.

Dr. Jagdev Sharma, the originator of in ovo vaccination using HVT, commented on the safety and efficacy of HVT-vectored vaccines. Insertion of genes to stimulate immunity against ND, ILT and AI have not altered the protective efficacy of HVT or resulted in any detectable clinical changes in recipient flocks.

Combining antigens

An important development to reduce cost and generate greater efficiency would be combining antigens creating multivalent products. An HVT or other suitable vector that could stimulate immunity against ND, ILT and IBD or a combination of these diseases would be a “killer app” and would certainly further stimulate the adoption of in ovo or subcutaneous administration at the hatchery to control broiler diseases worldwide.

Challenges facing the development and

commercialization of vaccines employing vector technology will include selection of vectors and insertion of appropriate genetic codes to stimulate antibody against target infections. Collection of data on efficacy and safety is expensive but required by regulatory authorities, who are now more familiar with this emerging technology. Questions concerning duration of immunity have yet to be resolved especially

development costs over a limited volume of vaccines. Claims relating to intellectual property and conflicting patents have impeded progress in adoption of vector vaccines although many of the difficulties which arose during the '90s have now been addressed. The current round of consolidations and acquisitions among pharmaceutical companies involving their livestock biologics subsidiaries has

▶ ***The first pox virus-vectored vaccines proved highly effective against Newcastle disease and avian influenza when administered to specific pathogen-free chicks.***

in egg-production and breeder flocks. The second issue is how vector vaccines will be incorporated into existing programs using both live attenuated viral vaccines and inactivated emulsion products.

Cost is a significant consideration as many of the biologics companies have been forced to amortize research and de-

velopment costs over a limited volume of vaccines.

CEVA Animal Health is complimented on its foresight in arranging the symposium and its commitment to refining and commercializing vector technology that will ultimately benefit the entire industry and all consumers of poultry products. **EI**

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Salmonella vaccines – A critical component of an SE prevention program

FDA Final Rule, egg recall emphasize need for diligent suppression of infection

By Simon M. Shane

Experienced gained in the EU and the U.S. has demonstrated the value of vaccines as a critical component of an integrated program to prevent vertical transmission of Salmonella enteritidis (SE) from infected flocks to consumers. The introduction of the FDA Final Rule followed by the August 2010 SE recall emphasizes the need for diligent and effective suppression of infection. The principles of control include:

- ✓Purchase of chicks from a hatchery compliant with the “SE Clean” regulations;
- ✓Effective biosecurity measures;
- ✓Intensive suppression of rodents; and
- ✓Successful immunization using approved vaccines.

Based on surveys it is believed that from 5% to 10% of U.S. flocks may be infected with SE. The Centers for Disease Control estimate that there were

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Poulvac ST™	Live Mutant ST	Pfizer Poultry Health	www.pfizerpoultryhealth.com
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*All available in multivalent combinations with IB & ND antigens			

It is believed that from 5% to 10% of U.S. flocks may be infected with SE.

376 outbreaks of SE in which eggs or egg products were implicated, involving 18,000 patients. Although the numbers of outbreaks caused by egg-borne SE have decreased from 1990 (85) through 2007 (29) concern over SE by successive federal administrations and public health officials has resulted in the Final Rule on salmonella introduced in July 2010. Concern for SE among consumers is evidenced by the sharp drop in consumption following the mid-August recall which seriously impacted margins and profitability. Losses to the industry during September alone were estimated at \$125 million based on the difference between the projected UB price and actual realization.

Following the emergence of SE as an egg-borne infection of consumers, biologics manufacturers applied two lines of development in producing and marketing salmonella

vaccines. In the EU, producers adopted inactivated oil emulsion vaccines in 1994, which qualified for rapid licensing but required injection into individual pullets. The second approach was to develop attenuated avirulent mutant salmonella vaccines which would offer protection when mass-administered to flocks either in water or by the aerosol (spray) routes.

The innovative nature of these live vaccine strains required extensive laboratory and field testing to convince regulatory authorities of their effectiveness and safety. Additional restraints arose from claims relating to intellectual property and the patent status of both products and the technology used to develop gene-deleted and mutant strains. Although these factors delayed release, both commercially available live mutant salmonella strains and inactivated emulsions are available and

Read more about controlling salmonella in live production.
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approximately 110,000 egg-attributable cases of SE among consumers in the U.S. in 2007. From 1985 to 2007 there were

have a complimentary role in integrated SE prevention programs.

Attenuated mutant vaccines

The three commercial vaccines (see chart) licensed by USDA are based on *Salmonella typhimurium* which has been modified by either deletion of genes or exposure to media containing chemical compounds which induce mutations.

✓Lohmann Animal Health market AviPro® Megan® Vac 1. This is an attenuated ST containing a natural occurring plasmid which is stable and due to size (91 kb) is not regarded as being potentially transmissible other salmonella or related genera of enterobacters. Mutations in the *cya* and *crp* genes affect the internal metabolism of the modified salmonella, suppressing the ability to reproduce. The mutant is deprived of pathogenicity compared to the wild-type progenitor organism. The vaccine strain retains the ability to bind to receptor sites on enterocytes lining the intestinal

tract. The vaccine strain serves as a highly specific competitive exclusion organism against naturally occurring salmonella including SE and paratyphoid serotypes including Heidelberg, Typhimurium, Kentucky and Hadar among others. The vaccine

second or pre-production dose for pullets to enhance protection against SE.

✓Pfizer Animal Health PoulVac ST vaccine was developed and marketed by Fort Dodge Laboratories prior to its acquisition. The strain is a mutant with deletion of the Aro-A gene. This

▶ ***Studies published in peer-reviewed journals confirm that mutant ST vaccines do not prevent systemic infection with SE, which may result in colonization of the liver, ovary, oviduct with inconsistent contamination of egg pools.***

strain can also invade gut-associated lymphoid tissue and stimulate significant local immunity. Extensive studies have failed to demonstrate any reversion to the wild-type state.

✓Lohmann Animal Health distributes AviPro® Megan® Egg which incorporates a higher concentration of the vaccine strain and is intended for the

prevents the organism from producing aromatic amino acids (tryptophan tyrosine and phenylalanine) required for reproduction and other biochemical functions.

✓CEVA Salmune™ is a *Salmonella typhimurium* mutant derived by chemical treatment of a wild-type strain. Mutant ST vaccine strains do not



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generally persist in the intestinal tract beyond 21 days following the initial day old to 48-hour administration. This necessitates administration of a second dose at 14 to 21 days to ensure protection of receptor sites until a robust competitive intestinal flora develops.

None of the mutant ST vaccines elicits a humoral antibody response and it is not possible to detect circulating antibody following vaccination. The ST vaccines will not produce a false positive reaction to the whole-blood plate agglutination test for Pullorum disease.

The mutant ST vaccines can be administered at the hatchery using an aerosol vaccination cabinet. Alternatively, vaccines can be delivered to newly-placed flocks by coarse spray or in drinking water provided appropriate precaution are taken to ensure even distribution and to prevent inactivation by chlorine. The second dose is usually administered in the drinking water or by coarse spray applying precautions

as directed by the manufacturer. Some producers apply a third vaccine to their pullets at 10 to 14 weeks, frequently selecting the more concentrated product. The three mutant ST vaccines as well as Megan® Egg may be administered off-label to producing flocks in an attempt to limit intra-flock spread of SE in the event of introduction of infection by rodents or defects in biosecurity.

Trial results

Pre-registration trials to demonstrate safety and efficacy of ST mutant and gene-deleted vaccines have shown significant reduction in colonization rates within the intestinal tracts of chicks receiving vaccine when subsequently challenged with field strains of SE and other Salmonella spp. Approximately 10% to 30% of vaccinated chicks may excrete SE after high levels of challenge (108 organisms) under controlled laboratory conditions. In cleaned houses, level of exposure is relatively low and

it is presumed that if adequately vaccinated flocks are exposed, the extent of intestinal colonization will be proportionately lower compared to deliberate exposure under laboratory conditions.

In the context of the U.S., certain practices have been implicated in reducing the efficacy of ST vaccines. The most significant factors relate to incorporation of antibiotics in the diluent used to administer Marek's disease. Studies conducted by Megan Health Inc., the developer of Megan® Vac were conducted with Naxcel™ (sodium ceftiofur) penicillin G and gentamicin. Day-old administration of Naxcel™ did not materially interfere with colonization of the liver, bursa of Fabricius or cecum with the Megan® Vac 1 vaccine. Slight reduction in recovery from all three sites was observed on the sixth day post vaccination in chicks receiving 0.2mg Naxcel™ at day old. There was no appreciable effect observed following administration of penicillin (5,000

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units by the subcutaneous route). Generally, it can be concluded that the dose levels of antibiotics currently used will not interfere with the effectiveness of gene-deleted or mutant ST vaccines administered at the hatchery.

The second consideration concerns incorporation of organic acids in feeds to suppress proliferation of salmonella which may contaminate ingredients. Adding propionic acid to feed to reduce the pH value to approximately 3.0 units had no effect on the colonization of the bursa, cecum or liver following vaccination with Megan® Vac. when assayed at one day and seven days after administration.

Studies conducted by Alltech have been conducted to show that administration of their mannanoligosaccharide prebiotic Bio-Mos®, known to agglutinate organisms with Type-1 fimbriae did not have any adverse effect on mutant ST vaccines.

It is considered likely that the benefits of a vaccination program comprising a day-old to 24 hour administration followed by a second dose during the period 14 to 21 days can be enhanced by simultaneous administration of a probiotic in either feed or water.

Studies published in peer-reviewed journals confirm that mutant ST vaccines do not prevent systemic infection with SE, which may result in colonization of the liver, ovary, oviduct with inconsistent contamination of egg pools. The live mutant and gene-deleted ST vaccines are regarded as a method of protecting the intestinal tract from environmental contamination during the early brooding period. The mutant and gene-deleted ST vaccines stimulate effective tissue immunity but of relatively short duration and with minimal protection from vertical transmission to eggs subsequent to transfer of pullets to potentially contaminated houses or complexes.

Inactivated emulsion vaccines

Inactivated emulsion vaccines have been used to control paratyphoid salmonella for many decades. The efficacy of autogenous vaccines has been demonstrated in specific breeding operations where paratyphoid strains have become endemic. In countries where “fowl

typhoid” (*Salmonella gallinarum*) is prevalent, it is common practice to apply programs incorporating both live and inactivated emulsion vaccines.

With the emergence of SE in the EU during the 1980s, inactivated SE vaccines were prepared and deployed rapidly to reduce rates of infection of flocks and to reduce vertical transmission. A number of studies in peer-reviewed journals confirm the efficiency

of SE emulsion vaccines. Studies conducted in Holland, Germany and Japan demonstrated reduction and in some cases elimination of egg transmission in flocks placed on farms which previously housed infected flocks responsible for vertical transmission.

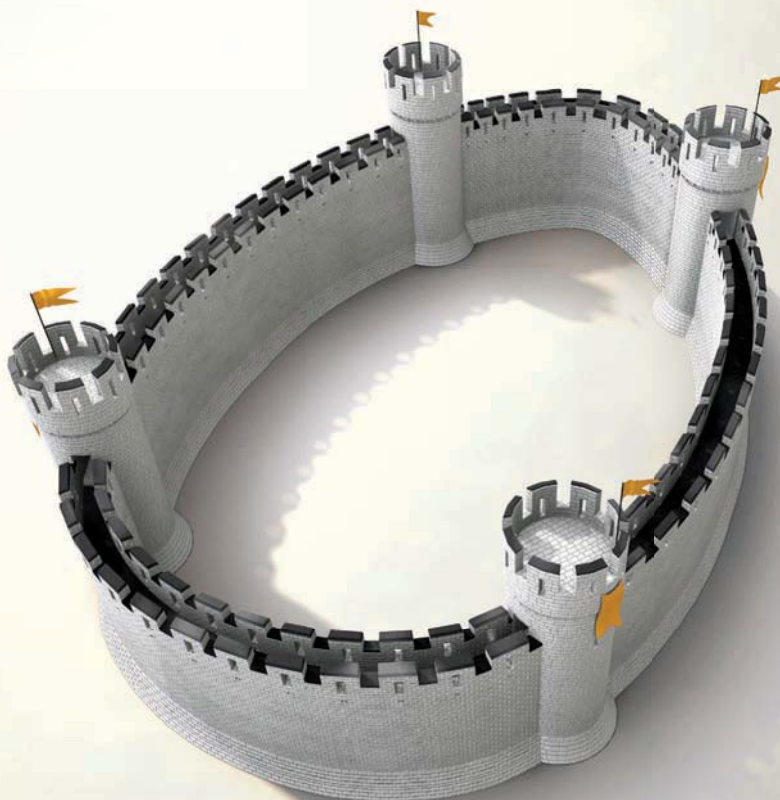
Experiments conducted in the U.S. by the USDA-ARS Southeastern Poultry Research Laboratory confirmed a high level of protection but not absolute

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elimination of vertical transmission following administration of oil emulsion vaccines. These trials involved high levels of challenge administered under laboratory conditions. Oil emulsion vaccines stimulate antibody which can be measured by commercially available ELISA assay.

Vaccination programs

Although no single program can address the needs of all producers, one approach (outlined in the chart) is generally used in the U.S. egg production industry.

Variations of this program may be followed by individual producers. Faced with SE environmental positive housing these may include the use of two emulsion vaccines or extra-label administration of high concentration mutant ST prior to molt. Administration of live mutant ST vaccine during the laying period will not reduce the probability of detection applying environmental assays. Administration of inactivated emulsion

VACCINATION PROGRAM GENERALLY USED IN THE U.S. EGG PRODUCTION INDUSTRY

VACCINE	AGE	ROUTE
Live Mutant ST	Day-old to 36 hours	Hatchery spray, in-house spray or in drinking water
Mutant ST or High-concentration Mutant ST	14 to 21 days	In-house spray or in drinking water
Inactivated SE Emulsion	12 to 16 weeks	Intramuscular or subcutaneous injection

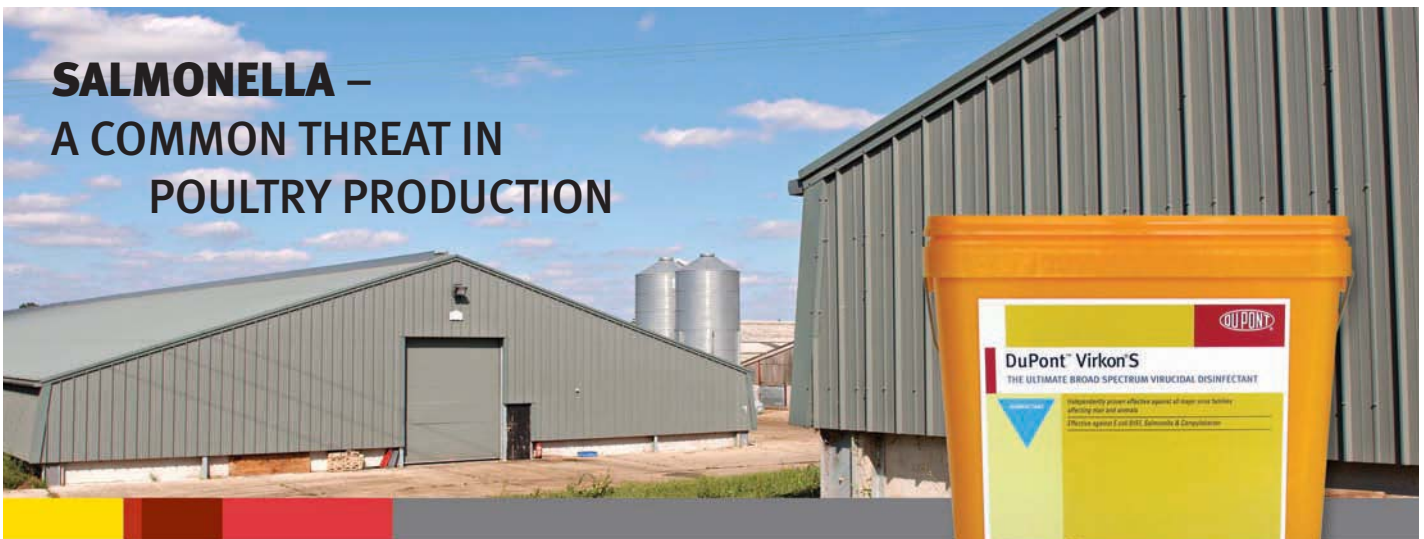
Approximately 10% to 30% of vaccinated chicks may excrete SE after high levels of challenge under controlled laboratory conditions.

vaccine prior to transfer will reduce the probability of vertical transmission in the event that flocks are exposed to SE. Flocks with circulating antibody when exposed to SE from infected populations of mice would most probably result in a positive environmental assay but a negative egg pool. It is noted that the level of transfer of SE into eggs is low (10 to 100 cfu). This is the reason for rapid cooling to 45F which inhibits proliferation to attain an infective dose for consumers even if eggs are not adequately cooked.

Contaminated eggs subjected to thermal abuse may have upwards of millions of SE organisms within 10 days representing a public health hazard.

Vertical transmission from infected hens is sporadic but stress associated with molting or immunosuppression can markedly increase the prevalence rate of infection. A combination of subjecting eggs to room temperature, prolonged storage at above 45F and starvation molting will overwhelm the benefits of vaccination and lead to SE outbreaks in consumers. The conventional microbiological procedure to detect SE in egg pools is generally regarded as being of low sensitivity. In contrast application of PCR technology results in higher sensitivity and specificity and a result can be obtained within 24 hours from receipt by a laboratory. **EI**

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Rapid rise in egg prices help overcome effect of egg recall

Prices expected to continue to rise throughout end of 2010

Maro Ibarburu, program manager for the Egg Industry Center (EIC) located at Iowa State University, released the September-October Statistical Report on November 9 prepared with the collaboration of Don Bell of the University of California Riverside.

There have been major changes in industry parameters attributed directly to the SE recall of August 14. The major trends over the past three months are summarized in Table 1, which highlights the changes in price, flock size and production cost with special reference to September and October.

The current report as distributed by the EIC is summarized for readers of *Egg Industry*. It is emphasized that data generated using models which are appropriate in times of relative stability lose validity during short-term turmoil.

✓ The U.S. estimated (6-Region) cost of production for October 2010 was 65.4 cents per dozen *ex-farm*, 3.1 cents per dozen or 5% more than in September. The range in production costs among regions extended from 60.6 cents per dozen in the Midwest to 69.8 cents per dozen in California.

✓ The margin represented by “income minus cost” for October attained breakeven compared to the negative margin of -17.7 cents per dozen in September. This more favorable situation is due to the concurrent 13.5% increase in production cost and a 23.9% increase in Uner Barry

Table 1. IMPACT OF SE AT A GLANCE

Parameter	August	September	October	Difference between September and October
U.S. flock (millions)	280.5	283.2	278.7	-4.5 (-1.6%)
6-Region production cost (c/doz)	58.2	62.3	65.4	+3.1 (+13.5%)
6-Region producer price (c/doz)	70.0	49.7	61.6	+11.9 (+23.9%)
6-Region U.Cal. margin (c/doz)	11.8	-12.5	-3.8	+8.7 (+170%)
Eggs broken (% production)	31.8	28.3	32.1	+3.8 (13.4%)
6-Region molt (% national flock)	24.2	23.7	25.8	+2.1 (+8.9%)

National flock size could be trimmed further by depletion following evidence of SE infection or if consumer demand is depressed following additional recalls.

41.3 cents per dozen, with pullet depreciation at 9.4 cents per dozen and other fixed and variable costs of 14.7 cents per dozen, applying the standard cost factors used by the EIC. These cost values other than feed and pullets remained unchanged through the first ten months of 2010.

✓ Producers attained a breakeven contribution per hen, based on October costs and revenue compared to a loss of -32.7 cents per bird in September which incorporated the fallout from the recall. The cumulative ten-month contribution per hen still stands at 103.4 cents.

✓ The UB simple average producer price for six U.S. regions, assuming 76% large eggs, was 61.6 cents per dozen for October compared to 49.7 cents per dozen in September 2010. The ten-month cumulative simple average UB price was 64.6 cents per dozen.

✓ The USDA-AMS determined an *ex-farm* price of 66.1 cents per dozen for October compared to 58.95 cents per dozen in September. Corresponding warehouse/distribution center and DSD prices were 72.55 cents per dozen and 83.05 cents per dozen respectively. The farm to store spread was 16.95 cents per dozen which was appreciably lower

than the value of 29.71 cents per dozen in September.

✓ In reviewing retail prices for table eggs, the Bureau of Labor Statistics and the Department of Commerce estimated a September average of 175.3 cents per dozen, 15.0% higher than the September 2010 value of 151.9 cents per dozen. The simple average retail egg price for the first nine months of 2010 was 166.6 cents per dozen.

✓ The large- to medium-grade white egg price spread over six regions was 20.2 cents per dozen in October compared to 22.8 cents per dozen in September with an average spread of 19.8 cents per dozen during the first ten months of 2010. Regional spreads ranged from 19.1 cents per dozen in the Northwest to 22.0 cents per dozen in the South Central and Southeast regions, a 10% narrowing widening compared to values for September.

✓ During October 2010, layer feed averaged \$241.41 per ton, which is 15.4% higher than the ten-month average of \$209.20 per ton based on six regions. During October the price range among regions was \$217.20 per ton in the Midwest rising to \$263.10 per ton in California. The differential of \$45.60 per ton is equivalent to ap-

See more about egg safety
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(UB) price. For the first ten months of 2010 the average margin was 5.5 cents per dozen.

✓ In evaluating the breakeven margin for October it was noted that feed cost was

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proximately 8.0 cents per dozen applying realistic industry production parameters.

- ✓ For the first ten months of 2010, commercial-egg strain eggs in incubators have remained almost constant at an average of 38.86 million with a range of 33.4 million in August to 42.9 million in April. The value for the first ten months of 2010 was 38.87 million compared to 36.51 million in 2009.
- ✓ Straight run hatch for September attained 40.3 million with an average for the first nine months of 2010 at 41.41 million.
- ✓ Projections for pullets to be housed in future months based on the five months-previous hatch and incorporating a 5% mortality factor, include a range in the increase in placements from 15.75 million pullets in April to 21.44 million pullets in September 2010. The 12-month average of 18.21 million pullets per month for 2010 is 5.5% greater (1.0 million pullets) than the 12-month average of 17.26 million per month for 2009. The 2006 to

2010 monthly average was 16.30 million pullets placed each month. January and February 2011 placements will be 16.7 million and 18.2 million, respectively.

- ✓ For September 2010, the USDA-NASS estimated the national flock at 280.8 million hens, which is 1.0 million more than in August 2010, following seasonal trends. Applying the University of California model based on USDA-NASS data for chickens and eggs, it is estimated that the December 2010 flock will attain 283.6 million hens (283.3 million as per the USDA estimate) which is a 2.4% reduction attributed to slaughter of SE positive flocks.
- ✓ The University of California estimated the national flock at 278.8 million for October, down 4.5 million (1.6%) from September 2010. This is the largest month-to-month decline in ten years and is attributed to depletion of SE positive flocks.
- ✓ As of the end of September 2010, 23.2%

of the national flock was over 72 weeks of age. With the exception of March 2010, which was an aberration at 26.0%, the seasonal pattern of a decline in molted flocks from January through April appears to be holding although this may be affected by depletion of SE positive flocks in the Midwest. For the entire year of 2009, an average of 24.7% of the national flock had been molted compared to 31.7% in 2008.

- ✓ During September 2010, USDA-FSIS data indicated that 6.1 million hens were processed compared to a pre-recall projection of 4.9 million hens and a nine month average of 5.88 million hens. The value for September should quantify the extent of slaughter of SE-positive flocks in Iowa.
- ✓ Six regions reported a simple average of 25.8% molted hens in October, up 8.9% from September 2010 and reflecting all states surveyed by the USDA-NASS. The actual proportion of molted hens in



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- ✓ The University of California estimated the national flock at 278.8 million for October, down 4.5 million (1.6%) from September 2010. This is the largest month-to-month decline in ten years and is attributed to depletion of SE positive flocks.
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the U.S. varies widely, from 9.8% in the Northeast to 37.3% in the Northwest. The ten-month average of 23.9% molted hens in the U.S. flock and differences among regions reflect production costs, revenue for eggs and realization value for spent hens. The upward trend is assumed to reflect retention of SE negative flocks which had been scheduled for depletion.

✓ According to the projections developed by the University of California, the most recent estimate of the national table-egg flock for October 2010 is 278.7 million hens. This number is expected to increase steadily to 283.6 million in December 2010. Given current surveillance programs as mandated by the FDA, national flock size could be trimmed further by depletion following evidence of SE infection or if consumer demand is depressed following additional recalls. Compensatory increased retention of known SE-negative flocks may occur in regions or for specialty product subject to available capacity including re-caging. Although UB prices during November have been

restored to previous projections a depression in price following additional recalls and consequential publicity will inevitably result in a decrease in hen numbers since flocks will be depleted at a rate faster than projected.

✓ In August, the University of California projected an UB large Midwest price of 117.3 cents/dozen for September, which was depressed to 89.7 cents per dozen as a result of the SE recall. A rapid rise occurred during October to achieve an average of 101.9 cents per dozen. The July projections of 140 cents per dozen for November and December have been revised to 126 cents per dozen. This projected value will only be exceeded if the current trends in flock depletion and consumer demand continue. It is reiterated that each 10 cents per dozen difference between forecast and actual UB price as a result of SE recalls with negative publicity will cost the industry \$30 million per month over 165 million hens producing generic eggs. The prospect for a rise depends on there being no further substantial recalls reinforced by positive

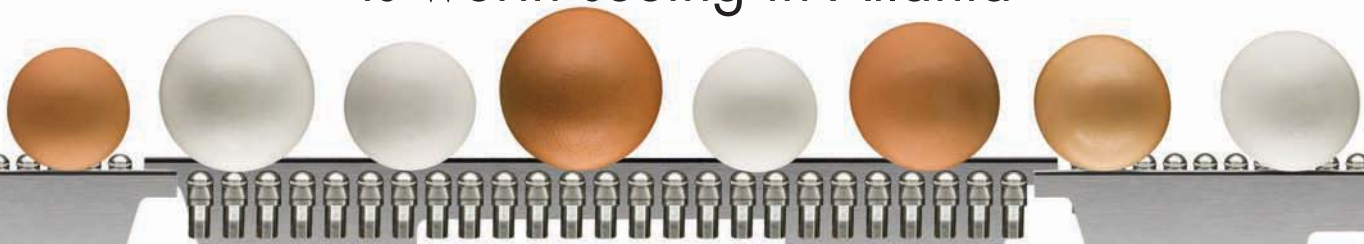
media reports projecting that the problem of SE is contained and is not a general reflection on the industry and the safety of our product.

✓ In September, the top six egg-producing states with 159.3 million hens (160.7 million in August) represented 57.7% of the total national flock of 276.35 million hens. In descending order these states are Iowa (19.4% of total), Ohio (9.9%), Indiana (8.2%), Pennsylvania (8.2%), California (7.1%), and Texas (4.9%). States reporting to the USDA-NASS represent 98.4% of all hens producing table eggs. It is evident that a disproportionate cull of SE-positive hens occurred in Iowa since the state total decreased by 0.48 million. The value for October will reveal the extent of depletion estimated by some industry observers at over 4 million hens. **EI**

At time of print, UB price had risen to \$1.50

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CDC report on SE outbreak

Reports of infection outnumber expectations

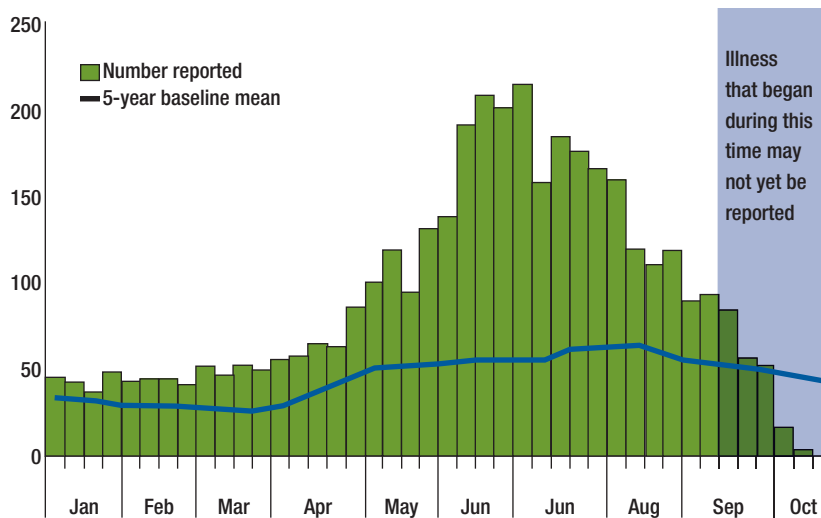
By Simon M. Shane

The Centers for Disease Control issued an investigation update describing the epidemiology of the nationwide outbreak involving SE with a PFGE pattern JEGX01.0004.

An increase in the number of reports of infection associated with this serotype commenced in late May 2010 as noted in the epidemic curve. Incident cases increased in July but declined after traceback, recall and diver-

sion of eggs produced by Wright County Eggs and affiliates in Iowa.

Based on the previous five years of reports to PulseNet, 1,369 total illnesses would have been expected during the four-month period contrasted with the 3,182 cases reported from May 1 to October 15, 2010. The pulse field gel electrophoresis assay is not definitive with respect to identification of isolates and the assay is not definitive for a common source. The procedure does provide an indication which correlates source and patients especially with extensive outbreaks. Genetic sequencing is required to definitively relate an isolate to a vehicle of infection or source.



The reason why there was a sharp increase of incident cases has yet to be explained.

Cause of the outbreak

An interesting question arises as to the cause of the sharp increase of cases noted during early July. Based on evidence released by the FDA, congressional testimony and news reports, the affected farms were releasing eggs with potential contamination since at least mid-2007. There must have been some reason for the sharp increase, which was detected by FoodNet and verified by PulseNet.

It is hypothesized that thermal abuse occurred as a result of either failure of refrigeration equipment on the affected complex or group of complexes since a large number of the incident cases were noted within a few weeks involving nest run eggs sold to packers for subsequent distribution over 11 states.

A second alternative is that flocks were subjected to stress by either post-Easter induction of molt using starvation which would have increased the prevalence rate of vertical transmission. A combination of these factors could result in the epidemic curve as detected by CDC surveillance.

Future evaluations

The positive SE status of farms and defects in biosecurity, rodent control and management have been documented and were in all probability of long standing. The specific reason why there were a large number of incident cases in June and July has yet to be explained.



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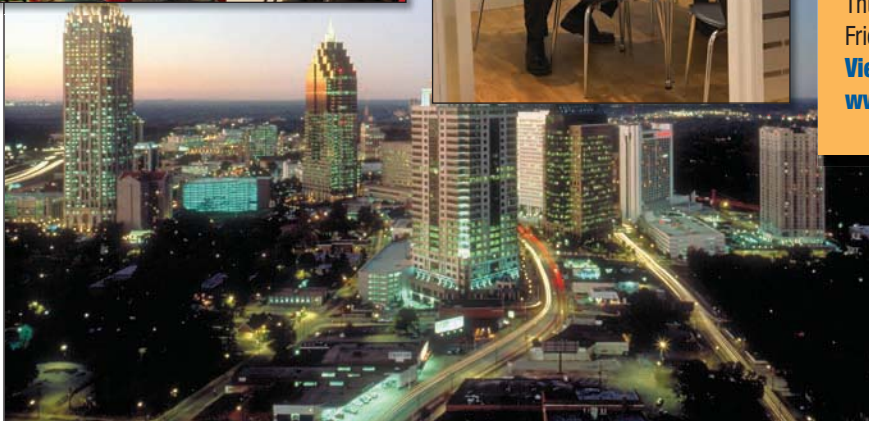
Wednesday, January 26: 10 a.m. – 5 p.m.

Thursday, January 27: 10 a.m. – 5 p.m.

Friday, January 28: 9 a.m. – 1 p.m.

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Scenes from the 2010 IPE/IFE.

The International Poultry Expo/International Feed Expo (IPE/IFE) will bring together 20,000 industry leaders from over 100 countries in Atlanta from January 26 to 28, 2011.

Sponsored by the U.S. Poultry & Egg Association (USPOULTRY) and the American Feed Industry Association (AFIA), IPE/IFE is the world's largest display of technology, equipment, supplies, and services used in the production and processing of poultry, eggs and in feed manufacturing.

More than 800 exhibiting companies will come together to showcase their latest technology, network, and become educated on the latest developments and issues facing

the industries today and in the future.

Seminars and workshops presented by industry experts, scientists and top-level company executives will update attendees on current and prospective industry issues. Attendees are invited to take advantage of these opportunities at no charge.

Expo highlights

This year's show will feature even more exhibits and a comprehensive line-up of education programs that will keep industry management up to date on important issues.

Kicking off the week will be the International Poultry Scientific Forum with information on environmental management, nutrition,

physiology, pathology, processing and products, and avian diseases. Expo education sessions will begin Tuesday with USPOULTRY's Hatchery-Breeder Clinic, new for 2011. It is moving from the meeting's traditional July dates to January to allow more hatchery and breeder flock managers to attend the show and see the latest equipment for their operations.

The Animal Agriculture Sustainability Summit and Pet Food Conference also will begin on Tuesday. Other programs Wednesday, Thursday, and Friday will include a special Salmonella and Campylobacter Reduction Conference, the popular Poultry Market Intelligence Forum, USPOULTRY Industry Education Program, a Feed Manufacturing Education Program, and other issue-specific sessions.

The 2011 IPE/IFE is introducing a new Technology Xchange Program which will offer opportunities for exhibitors to give presentations highlighting new technology developments. The purpose of this program is to provide information on new technologies in a generic format, as opposed to sales presenta-

tions. There is no charge to participating companies.

Finding future industry leaders

USPOULTRY encourages today's youth to become tomorrow's leaders. Held in conjunction with the Expo for more than 40 years, the student program attracts 300 students from 25 universities throughout the United States. They interview for job openings and internships with industry and allied firms and visit the exhibit floor to see the latest technology, equipment, and supplies used in today's industry. Interviews are scheduled Wednesday afternoon, all day Thursday, and Friday morning.



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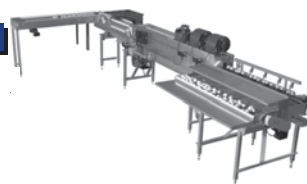
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2011 IPE/IFE Workshops, Conferences, Seminar Program Listings

Monday, January 24

8 a.m. - 5 p.m. International Poultry Scientific Forum

Tuesday, January 25

8 a.m. - 3 p.m. International Poultry Scientific Forum

8 a.m. - 5 p.m. Hatchery/Breeder Clinic

9 a.m. - 5 p.m. Pet Food Conference - Zell Miller Conference Center

1 p.m. - 5 p.m. Animal Ag Sustainability Summit – Room A411

Wednesday, January 26

8 a.m. - noon Pet Food Conference - Zell Miller Conference Center

8 - 11 a.m. Hatchery/Breeder Clinic

8:30 - Noon Salmonella and Campylobacter Reduction Conference

9 - 11:30 a.m. Animal Ag Sustainability Summit – Room A411

10 a.m. - 5 p.m. Show Open

Thursday, January 27

8:30 - 11 a.m. AFIA International Feed Education Program

8:30 - Noon Salmonella and Campylobacter Reduction Conference

9 - 11:30 a.m. USPOULTRY Education Program – Room A411

10 a.m. - 5 p.m. Show Open

Friday, January 28

9 - 11 a.m. Market Intelligence Forum

9 a.m. - 1 p.m. Show Open

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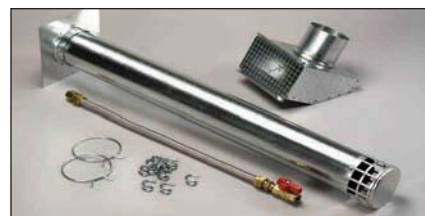
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See us at IPE-IFE, booth 2365

▶ PRODUCTNEWS

Space-Ray positive pressure radiant gas tube heaters



Space-Ray offers a line of positive pressure radiant gas tube heaters for poultry houses. The heaters have a Tube Integrity Safety System (TSS) for additional safety. According to the company, the heaters save on fuel costs, reduce maintenance and permit higher mounting in the poultry house for broader coverage and added efficiency. Available capacities range from 75,000 BTU/hr to 150,000 BTU/hr and lengths vary from 20 feet to 60 feet.

www.spaceray.com

COMPOUND	CLASSIFICATION	TRADE NAMES	SUPPLIER	PRESENTATION
Warfarin	1st generation anticoagulant	Final	Generic	Meal, Water
Pindone	1st generation anticoagulant	Pival, Pivalyn	Generic, Generic	Meal, Water
Diphacinone	1st generation anticoagulant	Ramik™, Rampage™, Tomcal™	Neogen, Liphatech, Liphatech	Blocks, (Blocks), Liquid
Chlorophacinone	1st generation anticoagulant	Rozol™	Liphatech	Pellets
Brodifocoum	2nd generation anticoagulant	Havoc™, Jaguar™	Neogen, Motomco	Blocks & Pellets Blocks
Bromadiolone	2nd generation anticoagulant	Boothill™, Hawk™	Liphatech, Motomco	Blocks Meal & Blocks
Difethialone	2nd generation anticoagulant	Hombre™, Fast Draw™	Liphatech, Liphatech	Blocks, Soft bait
Difenacoum	2nd generation anticoagulant	DiKill™	Neogen	Blocks & Pellets
Bromethalin	Non-anticoagulant CNS toxin	Cy-Kill™, Rampage™, Gunslinger™	Neogen, Motomco, Liphatech	Blocks & Pellets, Blocks, Blocks & Pellets
Cholecalciferol	Non-anticoagulant vitamin D3	Agrid3™	Motomco	Blocks & Pellets
Zinc Phosphide	Non-anticoagulant phosphine toxicity	Eraze™	Motomco	Pellets

COMMERCIALY AVAILABLE U.S. RODENTICIDES, (amended October 2010)

Amended table showing difenacoum and bromethalin as a 2nd generation anticoagulant and a CNS toxin respectively. We regret the typographic error which transposed the chemical classification in the October edition.

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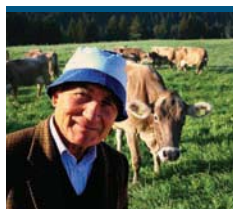
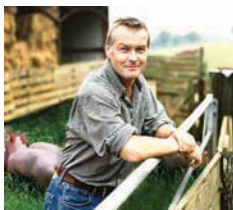
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International Poultry Expo Booth #702
Midwest Poultry Convention Booth #165



Methionine Global Outlook:

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Vostermans Ventilation central exhaust fans



Vostermans Ventilation offers central exhaust fans for livestock buildings and air washers. The fans have low power consumption and can be used in areas where a low noise level is important. A higher pressure range (100 to 200 Pa) and a lower range (50 to 100 Pa) are both available.

www.vostermans.com

American Farmland Trust 'A Guide to Environmental Markets for Farmers & Ranchers'

American Farmland Trust offers *A Guide to Environmental Markets for Farmers & Ranch-*

ers. Information provided includes reducing greenhouse gasses, improving water quality, restoring wetlands, protecting wildlife habitat, conserving water and generating renewable energy. The guide was released to address questions and provide further information on this relatively new subject.

www.farmland.org/environmentalmarkets

LITMUS ammonia monitors

LITMUS offers ammonia monitors that measure the levels of ammonia in concentrated animal feeding operations. A time-flexible format allows for one to 24-hour function; the monitors also provide average readings from 1 to 100 PPM. The resulting information allows operations to fine-tune adjustments to supplements, vents, timers and heat in facilities to control ammonia.

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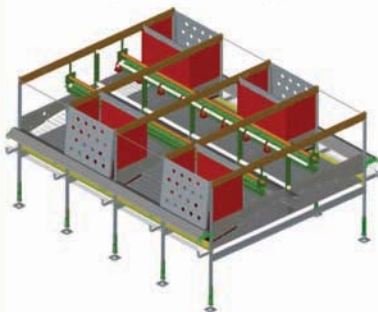
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See us at IPE-IFE, booth 2331

ALTERNATIVE SYSTEMS

Aviary Combi System



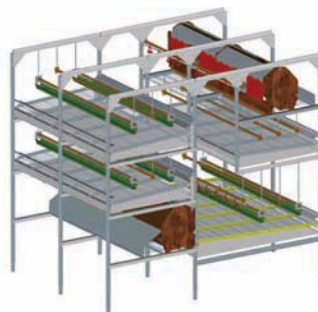
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INDUSTRY NEWS

UEP addresses SE crisis

The annual board meeting and executive conference of the UEP held recently in Williamsburg, Va., was detailed in the organization newsletter United Voices. The following initiatives will be implemented.

- ✓The UEP has established a Food Safety Scientific Advisory Council comprising eleven scientific experts to improve industry safety programs.
- ✓The UEP will update the 5-Star Total Quality Assurance Food Safety Program to be presented to the FDA and the FMI for their consideration.

- ✓Funding of approximately \$2.7 million will be required for the Michigan State University and the Midwest Universities Consortium to evaluate alternative caged systems, including enriched colony modules.
- ✓Animal welfare guidelines have been established for hatcheries producing pullet chicks, following a 2009 incident involving alleged improper disposal of cockerels.
- ✓The Egg Pack Committee reported contributions for the current year, which exceeded the goal.
- ✓Mark Oldenkemp, of Valley Fresh Foods,

was honored as the UEP's Egg Producer of the Year.

- ✓Howard Helmer received the President's Award for his long service promoting eggs. Guest speakers at the conference included Robert Kohlhahn of Diverse Ctiiversey Inc. on sustainability. Chuck Conner, president of the National Council of Farmer Cooperatives, addressed issues relating to cooperatives and activities of the USDA and the Department of Justice. Dr. Cora Morgan of the Food and Drug Administration provided a review on performance measures to access SE reduction and Marie Fenn President, of the National Peanut Board, discussed the salmonella crisis in 2009 affecting peanut products. **E**

MARKETPLACE

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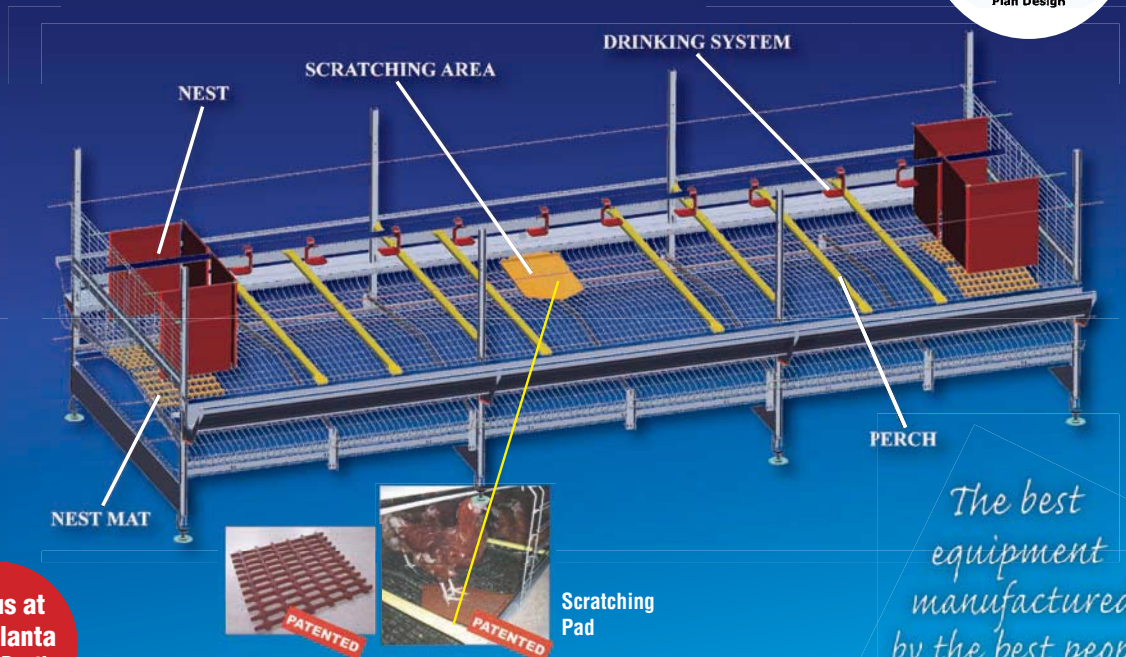
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