

115th ANNIVERSARY Egg Industry WATT

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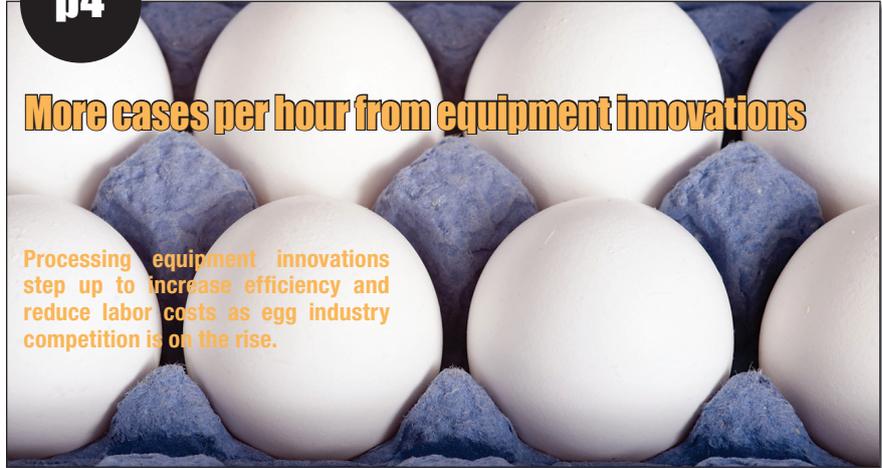
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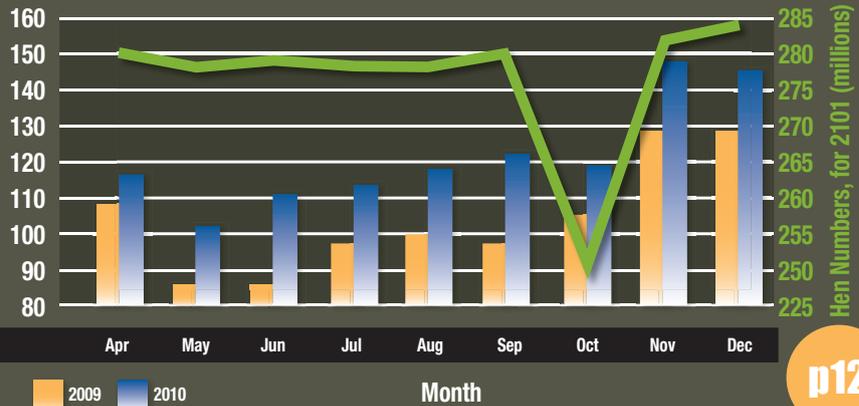
More cases per hour from equipment innovations

Processing equipment innovations step up to increase efficiency and reduce labor costs as egg industry competition is on the rise.



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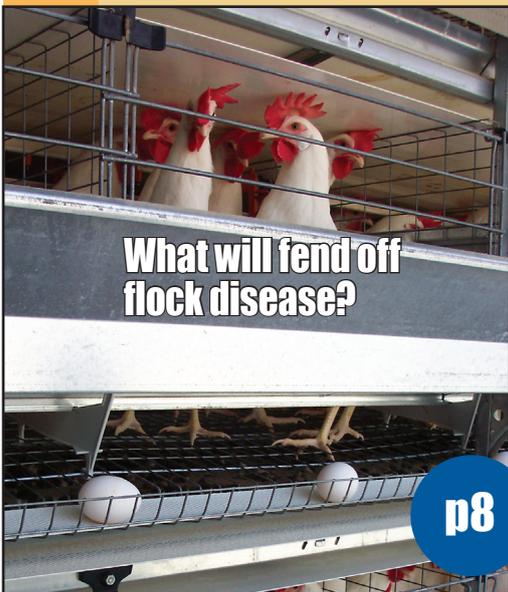
Comparison of 2009 actual UB Mid-west large prices



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Urner-Barry Midwest large prices for the first three months of 2010 averaged 128.7 cents/dozen. Courtesy, Egg Industry Center.

What will fend off flock disease?



p8

Science provides the key to healthy flocks which equal profitability.

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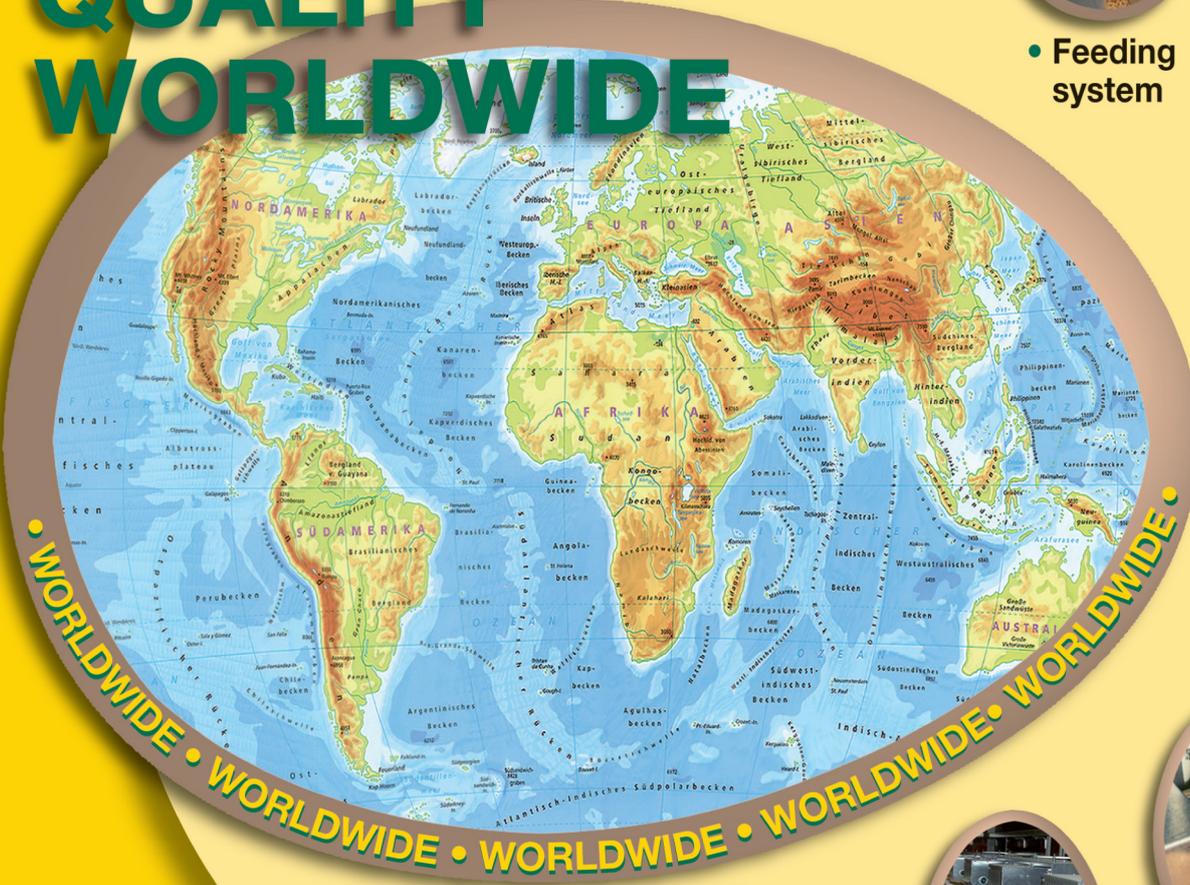
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EDITORIAL

BY DR. SIMON M. SHANE

Hot summer topics: hen welfare and equipment advances

Industry competition spurs improved efficiency and quality within our industry.

Summer seems to have emerged prematurely from a cold and wet winter without the fanfare of spring. It is hoped that all your evaporative pad and nozzle cooling systems have been tested and are functional and that high temperature alarms and emergency generators are online.



Simon M. Shane

With the end of a sun spot cycle and the tail of the El Niño we could be in for a long hot summer, without allusion to Tennessee Williams.

This edition incorporates a range of topics. Flock health as reviewed at the North Central Avian Disease Conference is represented in the interpretive summary of articles dealing with egg production. My colleague and friend of many years Dr. Gregg Cutler shares his

views on the welfare movement.

Dr. Cutler has represented the needs of egg producers at forums including the AVMA and Congress for the past two decades and was deeply involved in the opposition to California Proposition 2 - his home state.

Advances in grading and processing eggs are considered in a feature article. We are fortunate that two large companies are active in R&D, manufacture and servicing of installations for our plants. The level of competition benefits producers through acquiring equipment with the potential to improve efficiency and quality.

Customary news items with appropriate commentary are included supplementing the electronic edition of *Egg Industry* and the WATT website - www.WATTAgNet.com - which has advantages of immediacy and brevity.

Please contact me if you have any suggestions for articles or wish to comment on any aspect of *Egg Industry*.

Simon

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Readers are encouraged to share their questions, comments and solutions with the editor at sshane@wattnet.net

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More cases per hour from equipment innovations

Increased efficiency, reduced labor costs and operator safety help control ROI in today's competitive environment.

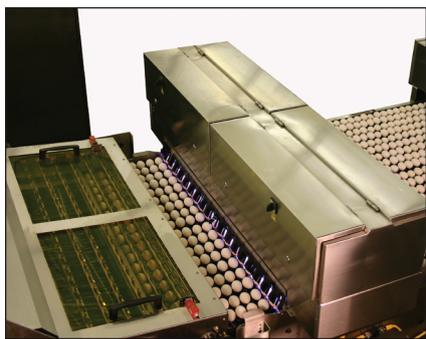
By Simon M. Shane

Based on a current hen population of 282 million and 70% of production sold in shell form it is estimated that U.S. producers have to pack 140 million cases annually or 0.38 million cases per day. Assuming an eight hour work day and a weighted average effective processing rate of 275 cases per hour there are between 175 and 200 graders in operation in U.S. plants ranging in capacity from 100cph to 500cph per installation.

Mechanization is critical to constraining costs and improving speed and efficiency. Accordingly, products offered by the two major U.S. suppliers indicate future trends. Over the past two decades, the standard for new egg production operations has comprised a 1 million to 1.5 million hen in-line complex.

As high-rise houses are re-caged with multi-tier belt batteries, processing rate must increase to allow for single-shift packing. It is estimated that at least 20% of eggs are packed off-line, especially with the increase in the number of floor systems operated by contractors. These installations require farm packers and in-feed equipment at the plant.

There are a number of plants which oper-



Diamond Innova 18W egg grader.

ated have seen significant consolidation in egg packing and processing. Sanovo Technology Group has been formed following the acquisition of Staalkat based in Holland by Sanovo of Denmark. The new corporate entity will include Staalkat International manufacturing farm packers and egg graders with Sanova Technology A/S supplying egg processing equipment in association with affiliate companies involved in environmental applications.

The acquisition of Diamond Automation by Moba has resulted in the formation of Diamond-Moba Americas responsible for egg grading and packaging

efficient competition to ensure technological advances and appropriate pricing.

Farm packers

Diamond produces a range of farm packers including the newly introduced FPX module with a capacity of up to 100cph. Designed for large production units supplying remote plants, the packer is constructed of stainless steel and features automatic speed control based on rate of egg flow.

The unit has a built-in egg counter and incorporates a key pad, an interactive display and auto-diagnostic capability. The farm packer can be equipped with an op-



Staalkat farm packer.

tional tray stacker. The new module joins a line of lower-capacity units first introduced to the U.S. market in 1960.

Staalkat farm packers are available in capacities ranging from 40cph to 200cph. The manufacturer has designed these units for ease of operation, simple maintenance and a small footprint.

Egg conveyors

Lubing of Germany offers a complete range of conveying equipment through Lubing Systems, the U.S. subsidiary. Lubing offers polypropylene belts and rod conveyors as approved by USDA. The Lubing Belt Conveyor System can be installed in lengths of up to 2,000 feet operating with a 7hp motor.

Lubing manufactures rod conveyors



For more information on products in this article go to: www.WATTAgNet.com/15300.html and follow the links

ate both off-line and in-line, requiring duplication of equipment. Some units operate exclusively off-line requiring special egg handling at the front end and installations to wash and dry reusable plastic trays.

M&A benefits industry

During the past two years there has

and OvoPro specializing in breaking and pasteurization. The rationalization and realignment of companies has contributed to synergy with respect to research and development, sales and service.

Ultimately the various mergers and acquisitions will benefit both producers and manufacturers but there will be suf-

with a variety of curves to accommodate a wide range of house configurations.



Lubing curved conveyor.

The Lubing accumulator table directs eggs from rod and belt conveyors into graders. Features include a self-tensioning interlocking polypropylene belt with variable frequency drive. Lubing claims that their conveying equipment has a 75% share of the U.S. market.

In-feed installations

Sanovo supplies the OptiLoader with a rotary system for compact installations. The unit is designed to receive a wide range of egg weights and is versatile with respect to trays. Gentle handling of eggs is achieved using electronically control-

led servo gear motors.

Suction heads operate with a two-step blow-back system for optimal delivery and cleaning. Eggs are delivered by low vacuum followed by a high pressure burst after release to clear the nozzles and prevent the blocking and dropping of eggs.

All of the internal parts of the Opti-Loader can be cleaned using the integral CIP installation.

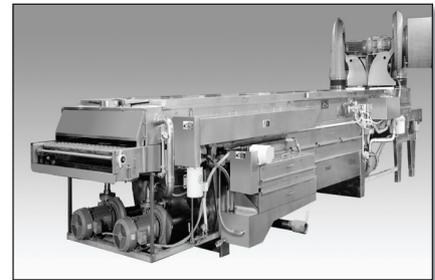
Egg washing

Generally washing equipment is supplied as a component of a complete grading and packing installation. For specific applications, Kuhl Corp. offers the WEB series egg washers ranging in capacity from 30cph to 200cph.

Their SB series can process from 300cph to 1,000cph. The WEB washers incorporate oval, scalloped horizontal-action nylon brushes which are claimed to have high efficiency.

The SB series incorporates patented brushes with an upgraded self-cleaning system with sprays to achieve rated capacity. Kuhl claims a lower water tem-

perature to achieve the same standard of cleaning as with conventional washers to expedite drying. Filtered air at room temperature is used in a double-action dryer with delivery of pressurized air through custom machine slots. Thorough drying of eggs is required for stamping which is necessary to achieve clarity of logos imprinted on specialty eggs.



Kuhl SB style egg washer.

Diamond now has a washer installation capable of processing 500cph. The units supplied by Diamond range from 5 rows to 18 rows with the lowest capacity rated at 50cph. All Diamond washers can be fitted with an optional presoak system

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and an external rotating screen to remove the shell debris, yolk and white remnants and manure.

Diamond washers incorporate a patented side-to-side brush motion and the complete manifolds with their nozzles can be removed for cleaning. Temperature can be controlled accurately using multi-tube heat exchangers fabricated from stainless steel. Washers incorporate CIP equipment.

The new high efficiency dryer comprises a single blower system for reduced energy use and low noise level.

Graders

Staalkat is able to supply imported graders with capacities of up to 300cph. The Ardentia range is constructed of stainless steel and incorporates electronic control. Currently upgrades are undergoing design and development for the U.S market to achieve capacities up to 500cph with a full range of crack, dirt and blood spot detection.

The Diamond range of Innova egg graders is available in 100cph to 500cph capacity with 6 wide to 18 wide accumulators, in-feed conveyors, loaders and egg washers. Innova installations are modular and can be upgraded in capacity. Innova systems incorporate automatic candling involving leak, dirt and crack detection.



Staalkat Ardentia 12 egg grader.

The range is designed for ease of cleaning and maintenance. The in-feed is totally compatible with washing and the digital egg scales are mounted on pull-out trays for ease of foam cleaning. Touch-screen control with traceability software can track each flock of eggs from production to consumer. Servo packers ensure gently handling of eggs and correct positioning in the cells of packs.

Diamond-Moba Americas have adopted the policy of supplying either Diamond or Moba equipment depending on individual client's requirements. Accord-

ingly the Moba Omnia range can be delivered in the U.S. with capacities ranging from 85cph to 500cph. Installations incorporate the usual modules including accumulators, dirt and leak detection, electronic crack detection, weighing, blood detection and case packers.

As it is an European unit, there are no factory-supplied washing modules. For the U.S. market installations would be fitted with Diamond modules as they are for international markets. Moba offers color detection to identify and reject brown eggs with visual shell defects as pre-determined.

In consistency with the EU market, an interface is provided for inkjet printing of eggs which is required in many nations in the European communities.

Diamond has introduced a new control system for the Innova grader range. The DC2 is standard on recently released 18W graders. Features include icon based software with a direct link to the servo packing. The previously used circuit cards have been replaced and the system offers improved reports and auto diagnosis.

Based on the combined technological resources of Diamond and Moba, Diamond Vision brown and white dirt detection modules are now available for new installations and for retrofitting to some recently supplied graders. Brown eggs can be screened for adherent dirt and there is no requirement for re-adjustment when changing from white to brown eggs. It is possible to run both brown and white eggs simultaneously in split-lots.

The vision system incorporates high resolution cameras and special illumination to detect surface manure, blood, yolk and feathers but can also detect pin holes. When grading brown eggs, the system can distinguish between defects and "freckles."

For off-line plants, Diamond now offers the FW-10 plastic tray washer and dryer which operate in as a single unit with an automatic spin drying cycle capable of processing 2,000 trays per hour representing a throughput of 165cph.

Robotics

For 2010 Diamond-Moba Americas will offer the Auto Pack robot system

developed in association with Motoman a subsidiary of Yaskawa of Japan. This leading world manufacturer of robotics produces over 175 models suitable for a range of industrial applications.

The robots have been adapted for egg plants with specially designed peripherals including the pick-up heads and software for efficient operation.

The MR30 robotic system can be configured to transfer consumer packs into cases, crates, display pallets or baskets. The robot can pick groups of packs from two locations for distribution into the



Moba robot tray palletizer MR 40.

shipping containers. In the MR40 configuration the robotic installation will palletize both plastic packs and fiber trays onto wooden pallets and insert interleaf sheets.

The system is capable of manipulating empty pallets and also weighing palletized product. The MR40 installation can handle up to 300cph.

Massman Automation Designs offer robotic packers to palletize loads. Installations can be configured to a variety of applications with a variety of in-feed and discharge patterns. The unit is capable of handling different sizes of boxes and can insert slip sheets as required.

Massman manufactures case packers capable of processing up to 25,000 eggs per hour (70cph) and a variety of models allowing dual-line operation with different products.

Moba accessories available through Diamond-Moba Americas include a tray stacker, tray palletizers, case pack-



Massman robotic palletizer.

ers with two individual modules in one compact frame to combine throughput of 70 cases per hour.

The Diamond Multi-caser can handle foam, PET and fiber cartons and egg trays. Carton labeling, pack splitting, label inspection and custom design conveyors are available for specific configurations of packing lines.

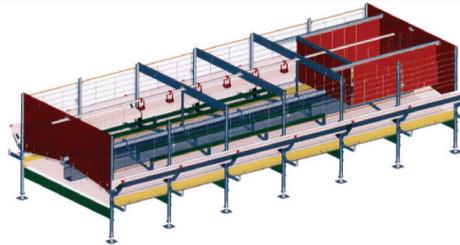
The bottom line

Innovations in electronic control and product handling will increase the effi-

ciency of plants to cater for larger complexes, reduce labor cost and minimize injury. These are important considera-

tions in a highly competitive industry with increasing concern over environmental and labor issues. **EI**

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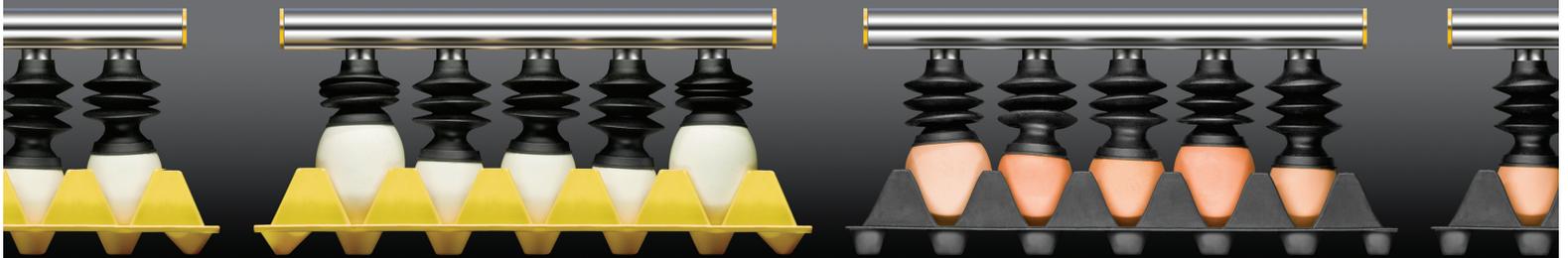
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What will fend off flock disease?

Experts discussed fresh insights to maintaining layer health during the 2010 North Central Avian Disease Conference.

By Simon M. Shane

A number of papers of significance to the egg industry were presented at the 61st Annual Meeting of the North Central Avian Disease Conference held concurrently with the 2010 Midwest Poultry Convention.

Beak deformation investigated

Dr. Robert Porter and colleagues at the Minnesota Veterinary Diagnostic Laboratory investigated a case of beak deformation in battery-housed hens ranging in age from 25 weeks to 60 weeks. Approximately 5% of birds in a flock were affected.

Characteristic lesions involved small scabs on the comb and the lower beak. In severe cases loss of beak tissue

flocks or where skin or beak tissue is damaged by feeders or by pecking.

It is noted that the hens in the affected flock were not beak trimmed.

Pullet mortality examined

Dr. Ian Rubinoff of Hy-Line International Laboratory and Dr. Daniel P. Shaw of the University of Missouri described a case of tracheal aspergillosis responsible for 2% mortality in a flock of 3-week-old pullets.

Initially diphtheritic pox and ILT were considered as differential diagnoses but microscopic examination of the occluded tracheas confirmed aspergillosis.

In this case, immunosuppression predisposed the flock to clinical disease after exposure to *Aspergillus* spp spores. Peritonitis attributable to *E.coli* was also observed in the flock and by 16 weeks of age mortality from secondary infection exceeded 9%.

Why delay vaccinations?

Dr. Kenton Kreager of Hy-Line International reviewed protection against infectious bursal disease. Based on extensive epidemiologic studies and experience in both broiler breeder and egg production flocks, a successful program of vaccination has been developed which appears to be protecting the industry.

Hy-Line recommends vaccinating flocks using an intermediate strain of live attenuated IBD vaccine initially at 18 days to 20 days of age with two consecutive doses at 1-week intervals.

The reason for delaying the first vaccination is that there is considerable maternal antibody transfer which interferes with live vaccine.

High maternal titer is due to the fact that parent flocks are primed with live attenuated vaccine and receive an inactivated booster prior to onset of production.

Aggressive IBD programs

In Europe, Africa, and Asia where highly virulent IBD strains occur it is necessary to apply more aggressive vaccination programs. Dr. Kreager discussed injecting killed IBD vaccine at 12 days to 16 days of age. In some areas an intermediate-plus vaccine such as strain 228E is usually adminis-

Science is also improving production
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was evident together with osteomyelitis (inflammation of the bone structures) of the mandibular (lower) and the maxillary (upper) bones in which the beak is inserted.

The organism responsible for the infection was identified as *Staphylococcus hyicus*. Although this organism is commonly isolated from the skin of normal chickens it is possible that lesions may develop in immunosuppressed



Science provides the key to healthy flocks which - in turn - provides the key to profitability.

tered after flocks receive a priming dose of a mild or intermediate strain.

In some locations hatcheries inject a mild live IBD vaccine at a day old in an attempt to block IBD receptors in the bursa of Fabricius to be followed at approximately 14 days to 20 days with an intermediate-plus strain vaccine.

Currently in the U.S. flock survival is regarded as a measure of successful vaccination. This however discounts the immunosuppressive effect of field challenge. Damage to the immune system by field strains of IBD will compromise the development of antibodies following vaccination against Newcastle disease, infectious bronchitis, laryngotracheitis and mycoplasmosis.

Preventing FDN

Focal duodenal necrosis (FDN) in egg producing flocks was reviewed by Dr. Eric Gingerich of the University of Pennsylvania. The condition was initially recognized and described by Dr. Patricia Dunn of the Diagnostic Labora-

tory at Pennsylvania State University in 1997. Since this time the infection has been observed in both caged and non-confined flocks.

The initial signs of the condition include depressed peak production (2% to 5%) and lower egg weight (1 lb to 2 lbs per case) accompanied by mildly elevated mortality frequently accompanied by as much as a 10% post-peak depression

▶ **Currently in the U.S. flock survival is regarded as a measure of successful vaccination.**

in production.

Characteristic lesions are noted in the duodenum and proximal ileum but are best observed in sacrificed hens.

Post mortem decomposition obscures recognition of the individual or confluent ulcerations when reviewing collected dead birds.

The causal organism is now regarded as *Clostridium colinum*, a pathogen re-

sponsible for ulcerative enteritis in game birds and occasionally in chickens.

Antibiotics which suppress gram positive bacteria in the intestinal tract will prevent clinical focal duodenal necrosis. Addition of bacitracin at 25 grams per ton of feed is frequently administered as is tylosin which is used to suppress mycoplasmosis.

Withdrawal of antibiotics from feed

results in a proportional increase in the incidence rate of FDN in the flock.

A number of producers have administered probiotics - live direct fed cultures (Primalac) - or prebiotics (Bio-Mos or XPC). Botanical products (Apex or Regano) have been introduced to the market but have not been adequately evaluated under field conditions. **EI**

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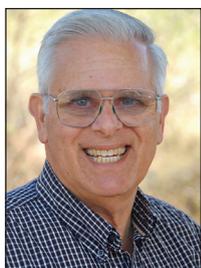
Let them be active
let them be productive



Young professionals needed to continue industry's voice

Dr. Gregg Cutler anticipates continued shifts in AGP use, housing and legislation, and calls for training of the next generation.

Dr. Gregg J. Cutler has roots in the poultry industry going back three generations. A native and resident of California, he leads a four-veterinarian poultry practice consulting in poultry health, management, food safety and welfare. He obtained his undergraduate degree in 1969 and DVM degree in 1974 from the University of California at



Dr. Gregg J. Cutler

Davis. Dr. Cutler was the first resident in avian medicine at UC Davis and earned the MPVM in epidemiology and flock health in 1978.

In addition to his professional responsibilities Dr. Cutler has served the industry in positions including the National Poultry Improvement Plan, the California Veterinary Diagnostic Laboratory Board, and the American Veterinary Medical Association Animal Welfare Committee. His community involvement includes serving on the Citizens Advisory Committee of the Ventura County Air Pollution Control District and

agement from Dr. John Allen, the company veterinarian. He was an inspiration and mentor with an extensive knowledge of factors contributing to flock health and productivity.

EI: You have unfortunately had some contact with catastrophic disease. Please share.

GJC: I worked closely with producers to help control the H6N2 avian influenza outbreak. Although classified as a low pathogenicity strain, the birds did not know this and losses were severe. I was also involved in ending the exotic Newcastle disease outbreak. AI and ND represent an ever-present danger to the industry in California and other border states. Movement of workers to our farms from homes south of the border where these diseases are endemic is a constant concern. We must be extremely vigilant with biosecurity procedures.

EI: What erosive diseases are encountered?

GJC: As a health professional I'm concerned over the incidence and severity of ILT. I look forward to the day when we cease using live chick embryo origin vaccine which, according to scientists at the University of Georgia, is responsible for the majority of field outbreaks. Coryza is also encountered. It can be controlled but at a cost in terms of slight production loss and administration of effective vaccines.

Although not at the top of the list, *E. coli* infection is responsible for substantial losses. The condition is sporadic in its occurrence but it is usually associated with defective management, environmental control and immune function.

EI: What are your views on the controversy over antibiotic use?

GJC: I believe strongly that veterinarians should be able to use antibiotics for therapy applying the principles of judicious use as promoted by the FDA. I do not subscribe to the idea that we should completely ban antibiotics because this would be analogous to throwing

out the baby with the bath water. As far as antibiotic growth promoters are concerned, I feel that we will have to find alternative solutions.

This is not because the public is suffering as a result of using AGPs, but because consumer resistance and the perception of harm will predate replacement. The most important considerations in relation to alternatives to AGPs, the probiotics and prebiotics and even botanicals, is whether they are as effective and can provide a positive benefit to cost ratio.

EI: You have been involved in aspects of welfare for over 20 years. How do you view current events?

GJC: I believe that those supporting animal welfare regard animals as beneficial. Animals provide food, fiber, recreation and contribute to our body of scientific knowledge. At the same time society has an obligation to provide for the needs of flocks and herds and to ensure that their existence conforms to housing and management standards which are based on scientific evaluation and measurement.

In contrast, "animal rightists" believe that animals should not be used in any way since this represents exploitation. Although advocates of animal rights are a small minority, they are extremely effective at fund raising and manipulation of public sentiment. Unfortunately there are a number of radical organizations that are no more than domestic terrorists with scant regard for the laws of our nation or property rights. They believe that their extremist views justify any destructive actions.

I have served on boards and committees including the AVMA Animal Welfare Committee and have always followed a moderate and reasoned approach to flock welfare based on scientific and practical considerations.

EI: How do you envisage animal welfare affecting egg production?

GJC: HSUS, which appears to be the leading umbrella group for animal rights advocates, may be moving from state initiatives to federal

Which legislative issues top the list?

www.WATTAgNet.com/13426.html

the Santa Rosa Mutual Water Co. and local youth organizations.

Dr. Cutler has agreed to present his personal beliefs and opinions.

Egg Industry: Please share your early experiences in the egg industry?

GJC: My father (alive and well) was a co-founder with Julius Goldman and Dr. John Allen of Egg City in Moorpark. From the mid-1970s to 1980s this complex was the largest egg production enterprise in the world with 3.5 million hens. Working part time as a high school student, I gained experience in man-

legislation. If the truth be known, HSUS is less concerned with welfare of flocks than with amassing funds for their avowed intent of superimposing a vegan lifestyle on our nation.

The leaders of the organization have a disproportionate concern for raising money and political action rather than devoting funds for the advancement of practical welfare. As a practicing poultry veterinarian I consider that well-managed facilities will continue and prosper but there will be some smaller operations that will not continue because of lack of available capital to allow them to make reasonable changes to their facilities.

If legislation is unreasonable and restrictions too arduous, I believe that there will be migration of production to other states or countries where welfare and food safety oversight is much less than in the United States. Housing systems in the future may be different from what we are using. Evaluation of colony systems, enriched or not, will be beneficial.

EI: How do you view training of the next generation of poultry health professionals?

GJC: There must be a balance between theory and practice. We need to support residency programs, externships and preceptorships. We may have to reevaluate material incorporated into the curricula of our veterinary colleges.

We are faced with a burgeoning population and will have to feed over 9 billion people by 2050. This can only be achieved by applying

technology including GMO grains, highly intensive, efficient livestock systems and distribution networks which avoid wastage.

EI: How do you view the future?

GJC: There are many in Washington at present attempting to “bring back the family farm.” In the U.S. there are many family-owned egg production enterprises with between 1 million and 10 million hens. These have grown because of efficiency and their ability to convert resources into food. They are still family farms.

There will be more consolidation and housing systems will change. There is concern as to whether there will be sufficient capital available. Egg production is extremely complex and the regulatory environment is creating new demands at an ever-increasing pace.

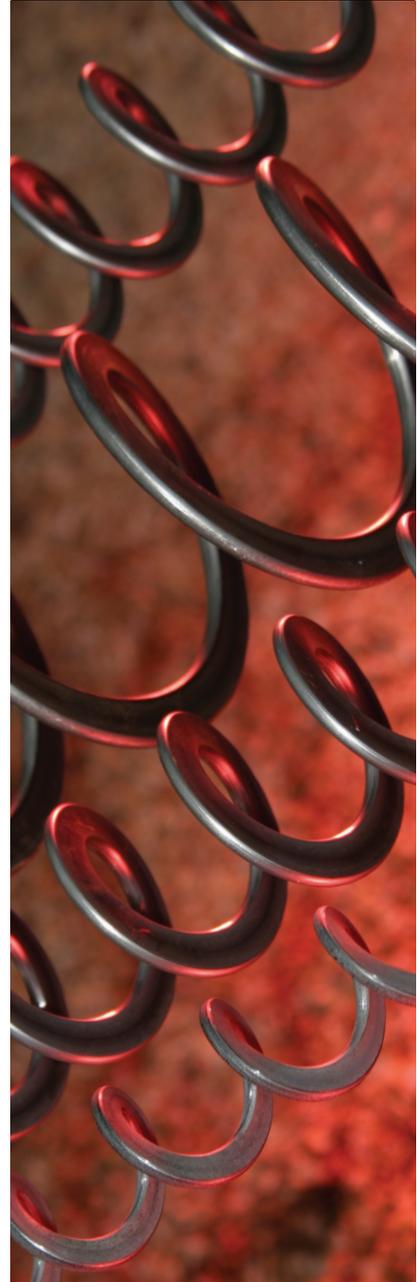
EI: Do you have final messages?

GJC: Diverse segments of our industry must work together. This is best achieved through our state and national organizations, which provide a voice in Washington.

Our biggest enemy is over-production. Restraint of expansion has obvious benefits. To a large extent we have eliminated the boom and bust cycles of past decades.

We require a new wave of professionals that are technically trained, politically astute and able to make strategic decisions benefiting all stakeholders including our consumers. **EI**

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Industry balance pays off

Egg prices are up, production costs are down and controlling flock size is contributing to market stability.

January-February statistical report Number 87 issued on April 5 provides valuable data on the current status of the egg industry and indicates future trends.

According to data assembled and collated by Don Bell, Poultry Specialist Emeritus, University of California, restraint in expansion has contributed to market stability. This is evidenced in the forecast prepared jointly by Bell and Marlo Ibarburu issued by the Egg Industry Center.

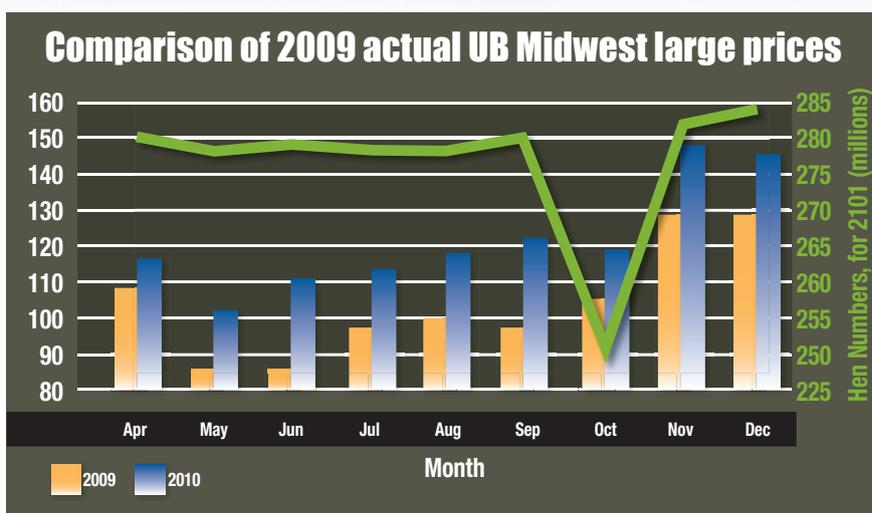
Key data indicating the status of the U.S. egg industry:

- ✓ Average monthly pullet hatch January/February 2010 was 19.73 million, a 5.3% increase over the corresponding months in 2009.
- ✓ The 24-month previous hatch average for January and February is 464.732 million pullets or 1.8% above the corresponding months in 2009.
- ✓ For the first six months of 2010 it is projected that an average monthly placement of 17.14 million pullets will be transferred to laying houses. This value is 0.31% above the first six months of 2009.

Compare these statistics with projections made by industry members

www.WATTAgNet.com/13953.html

- ✓ The average flock size for the first two months of 2010 corresponds to 281.5 millions hens or 0.7% less than the first two months of 2009.
- ✓ Total egg production during the first



Urner-Barry Midwest large prices for the first three months of 2010 averaged 128.7 cents/dozen, a 16.4% increase over corresponding months in 2009.

two months of 2010 remained constant compared to the corresponding period in 2009 at 12.525 million or 34.8 million cases.

- ✓ Through February 2010, 23.6% of the national flock had been molted, approximately 1.2% less than the corresponding period in 2009.
- ✓ Hen slaughter increased by 13% during the first two months of 2010 to 5.48 million. It is noted that this figure represents hens slaughtered in USDA inspected plants. It does not include flocks which are rendered or disposed of in landfills, representing between 50% and 55% of depleted flocks.

✓ Egg breaking for products in 2009 decreased by 2.6% compared to 2008 to 30.8% of total U.S. egg production.

- ✓ Urner-Barry Midwest large prices for the first three months of 2010 aver-

aged 128.7 cents/dozen compared to an average of 112.4 cents per dozen for the corresponding first quarter of 2009, an increase of 16.4%.

- ✓ Urner-Barry Midwest breaker egg prices for the first three months of 2010 averaged 57.6 cents/dozen compared to 47.4 cents/dozen, an 18% increase.
- ✓ Average production costs for 2008 amounted to 64.9 cents/dozen declining by approximately 10% to 58.7 cents/dozen. This was due to a decline in feed costs which peaked during the summer of 2008. For the first three months of 2010 the average production of cost attained 58.5 cents/dozen which corresponds closely with the 2009 average.

Egg Industry is indebted to Don Bell and Maro Ibarburu for the collection and presentation of detailed data which forms the basis of this summary. **EI**



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Research says: 4% more Grade A from caged hens

Egg size and weight from caged and range-housed hens were comparable but other measurements differed.

Dr. Kenneth Anderson, Department of Poultry Science, NCSU, presented results from brown-strain hens reared and housed in cages compared to range. In the case of the non-confined pullets, rearing through 12 weeks was completed in litter pens followed by movement to a range.

Performance was monitored from 17 weeks to 82 weeks of age. Pullets reared in cages were 93 grams heavier than pullets reared on range.

There was a 13% reduction in the feed consumed by range pullets con-

sistent with body weight and supplementation from foliage.

90% vs. 86%

Caged hens showed significantly higher feed conversion efficiency and egg mass. Mortality and egg production on a hen-housed basis were also significantly different.

There was no significant difference in egg weight or size. Caged hens produced 90% Grade A compared to

86% for the range hens although there was no difference in the number of checks between the housing systems.

Fat levels varied

There were no differences in cholesterol content of eggs and both vitamin A and E levels were similar. Eggs from the range-housed

How are EU countries responding to the impending cage ban?

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DATA EXTRACTED FROM REPORT ON THE 37TH NORTH CAROLINA LAYER PERFORMANCE TEST

PRODUCTION PARAMETERS

	Feed consumption lbs/100 hens/day	Feed conversion eggs/feed	Eggs H/H	Prod % HD	Mortality %	Man hours/bird
Eight caged white strains	23.6	0.49	354	82.8	14.1	0.173
Two ranged brown strains	224.5	0.50	331	80.4	20.2	2.663

EGG QUALITY & COSTING

	Grade A	Grade B	Checks	Loss	Egg income \$/hour	Feed cost \$/hen
All caged white strains	90.2	6.5	3.0	0.2	38.90	16.25
Two ranged brown strains	86.1	11.4	2.3	0.2	35.56	15.69

Caged hens showed higher feed conversion efficiency and egg mass. Egg size and weight were about the same. Mortality was higher and income lower for ranged brown strains.

hens had higher total fat and correspondingly both monounsaturated fat and polyunsaturated fat levels compared to caged hens.

As expected, beta-carotene levels were higher in the range-housed hens compared to the caged hens although this

Immune responses differed

An interesting observation was that the immune response of the range-housed hens was lower than their counterparts in cages. This was determined by the antibody titer following Newcastle disease vaccination.

Stress associated with free-range housing is in all probability responsible for the difference in immune function favoring cage housing. **EI**

Caged hens produced 90% Grade A compared to 86% for the range hens.

There was a numerical but nutritionally insignificant difference in omega-3 content of eggs -- 0.13%.

difference could be compensated for by supplementation with the commercially available xanthopyll supplements.



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Promoting quality: an interactive exercise

Assumptions obscure the real cause of increased mortality and decreased productivity.

During a quality and food safety audit a 55-week old floor-housed flock was presented with extremely high mortality averaging 2% per week. Mortality was evenly spread among four flocks of approximately 12,000 hens. Birds were housed on slats over a pit and were provided with adequate feeding space, nipple drinkers, nest boxes and perches.

Mortality commenced at about 40 weeks of age and progressed through to the time of the examination at 55 weeks of age. The standard of management was high with no obvious problems other than low ambient temperature associated with severe winter weather. The contractor attributed mortality to cannibalism. Neither he nor the servicemen had submitted live or dead birds to a laboratory for examination.

The striking feature of freshly collected carcasses was that they consisted only of skin, feathers and skeletal remains. Birds were not pecking having been adequately beak trimmed but on observation it was evident that any recumbent hen was immediately attacked and "shredded" by aggressive birds using their toenails.

Examination results

A few freshly dead birds were retrieved and examined. Predominant lesions comprised enlargement of the liver, peritonitis and purulent arthritis. These changes coupled with the pattern of mortality suggested a chronic bacterial infection.

Readers are invited to share their comments, problems and solutions with the editor at sshane@wattnet.net

Tissues were submitted to a diagnostic laboratory for examination. Since the farm had been used to supply fertile broiler hatching eggs prior to conversion to table eggs a provisional diagnosis of pasteurellosis was made which was confirmed by microbiological examination.

Corrective steps

Administration of antibiotics was deferred as the flock was producing a branded specialty egg. Recommendations were provided to administer both *E. coli* and *Pasteurella* vaccines to replacement pullets in addition to the conventional vaccination program.

An intensive effort to suppress rodents was initiated, including sealing of doors to prevent entry of rats and mice which were evident in the facility.

This case demonstrates the need to recognize a deviation from normal livability and to submit representative samples for competent professional evaluation.

Assuming that the problem was only cannibalism would have resulted in severe losses in the subsequent flock which would otherwise have not been protected against pasteurellosis.

Since many of the non-confined flocks in southern and southeastern states are housed in old broiler breeder units, the possibility exists that pasteurellosis persists in these facilities especially with evidence of chronic erosive mortality.

In this case, any sick or moribund bird was immediately attacked and killed, obscuring the actual cause of mortality. **EI**

INDUSTRY NEWS

Plan to attend the free WATT Online Feed Forum



The WATT Online Feed Forum offers free educational seminars and information on products and services from major feed suppliers. Wherever you will be on Thursday, June 24, you can participate through the Internet and interact with other decision-makers from around the world.

Registration is entirely free of charge.

The Forum agenda contains presentations from top experts in five key areas. Dr. Leland McKinney of Kansas State University, USA, and Will Henry of Extru-Tech will discuss practical aspects of feed manufacturing and extrusion. Dr. Jules Taylor-Pickard of Alltech and Dr. Gerd Schatzmayr of Biomin lead the discussion of mycotoxin control in feed materials. Professor Phil Garnsworthy from the UK's University of Nottingham describes new feeding techniques for high-yielding dairy cows. Dr. Kristjan Bregendahl from Hy-Line International provides guidance on the feeding of the mod-

ern laying hen. Dr. Albert Tacon from Aquatic Farms Ltd. in Hawaii will review the supply of feed ingredients for sustainable aquaculture.

Go to www.wattevents.com for full details

about the WATT Online Feed Forum, including how to register. The forum on June 24 will run from 08:00 GMT until 23:00 GMT -- so you can take part at a time of day to suit you.



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Mycotoxin Control: Present and future choices for controlling mycotoxins in feed

By: Dr. Gerd Schatzmayr, BIOMIN

Mycotoxins: Now is the time to sort fact from fiction By: Dr. Jules Taylor-Pickard, Alltech

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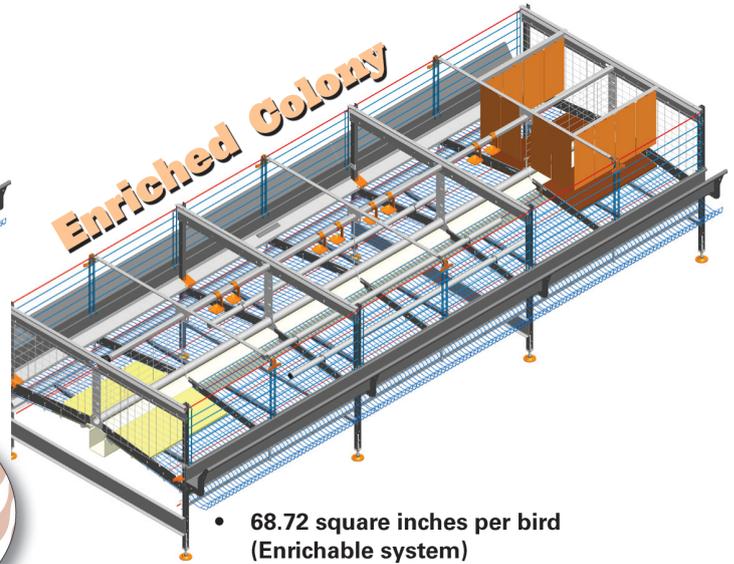
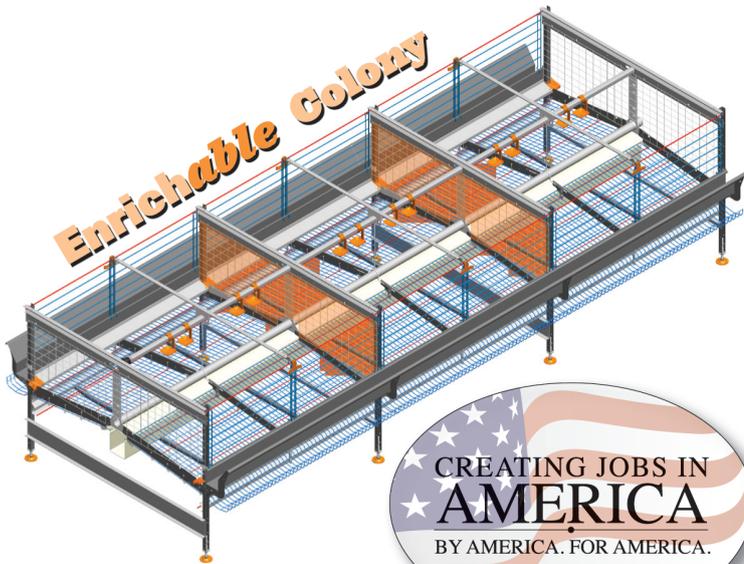
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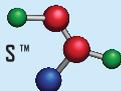


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