www.WATTAgNet.com SEPTEMBER 2010 volume 915 number 9

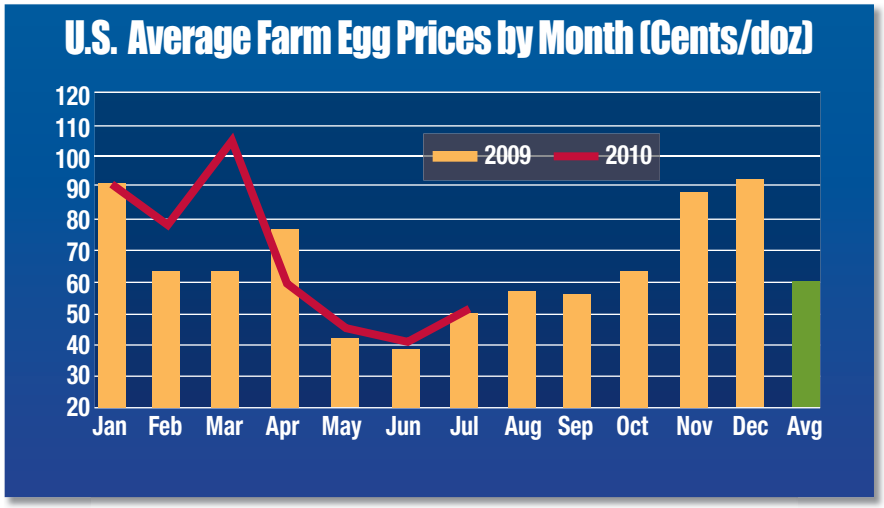
WATT Egg Industry

115th ANNIVERSARY

News for the Egg Industry Worldwide

Inside

Photo: Andrea Saladino



The egg price paid to producers was 10.6 cents/dozen higher in July 2010 than in June.

EDITORIAL

BY DR. SIMON M. SHANE

Focusing on nutrition

From advances in ingredients to the latest additives, Egg Industry takes a look at nutrition trends

This edition of *Egg Industry* focuses on nutrition. Feed represents a significant proportion of production cost and competitive purchasing of ingredients and appropriate formulation are important determinants of profitably. Advances in nutrition and trends in selection of ingredients are highlighted in the interpretive summaries of presentations from the July 2010 meeting of the Poultry Science Association.

Simon M. Shane

Feed additives have the potential to enhance productivity and profitability. The lead article in this edition classifies the categories of additives for hen diets and indicates the range of commercial products available and their suppliers. It is emphasized that feed additives must be both safe and effective. Products approved by regulatory agencies and manufactured by reputable companies conform to these requirements. In the context of commercial production is necessary to establish that an additive will provide a positive benefit to cost ratio which will contribute to incremental profit.

Strategic decisions are based on an evaluation of supply and demand factors relating to the market served by a producer. Statistics are available from the Egg Industry Center, incorporating the contributions of Don Bell, in addition to available data from the USDA-ERS and the USDA-AMS. Continuing the precedent established a few months ago, each edition of *Egg Industry* will provide a summary of the most recent data with interpretive comments.

The interview with Dr. Don Layman provides an insight into the activities of the Egg Nutrition Center funded by the AEB. This group has in the past contributed materially to changing the image of eggs in relation to cholesterol and public health. Future ENC research will concentrate on demonstrating the unique nutritional benefits of eggs.

On another note, the recall of products from two farms in Iowa is still a developing story with national media coverage. There are many unanswered questions as to why this episode has occurred, the extent of the problem, culpability and future action. The official UEP, FDA and CDC press releases suffice at this stage. It is intended to review the situation when more facts are available but before scheduled Congressional hearings. The fact that the outbreak coming so soon after inception of the FDA Final Rule has attracted the attention of both Houses denotes the gravity of the situation and has profound implications for the industry and all stakeholders.

Simon

sshane@wattnet.net

Egg Industry

www.WATTAgNet.com

CORPORATE HEADQUARTERS

WATT

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

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 Dunaev
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
Sue Snyder, ssnyder@wattnet.net
Tel: +1 815 966 5523; 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

To order reprints contact **FosteReprints**
+866 879 9144 www.fosterprinting.com.

SUBSCRIPTION INQUIRIES / CHANGE OF ADDRESS:
www.WATTAgNet.com or contact customer service at +1.800.869.6882 or +1.763.746.2792. Business and occupation information must accompany each subscription order. Single copy price US$14.00 unless otherwise marked.

Change of address: Give both old and new address when reporting change of address to EGGI@KMPSGROUP.COM or fax to +1.866.658.6156

POSTMASTER: Please send change of address to KMPS, 15301 Highway 55, Suite #3A, Plymouth, MN 55447 Periodicals postage paid at Rockford, IL, USA and additional post offices.

EGG INDUSTRY (ISSN 0032-5805) is published monthly by WATT, 303 N Main St Ste 500 Rockford, IL, 61101 USA.

Dietary additives for egg-producing flocks

Action, safety and efficacy

By Simon M. Shane

A wide range of supplements are added to the diets of rearing pullets and commercial egg production flocks. These compounds are included in diets at low volume, frequently at less than 0.5% of the diet. The price of additives may vary widely and the cost should be related to both ton of feed and per dozen eggs produced.

The functions of additives include:

- ✔Improving productivity through increasing egg numbers, egg mass or feed conversion efficiency;
- ✔Enhancing quality of product such as intensifying yolk color or improving shell quality;
- ✔Increasing the nutritional value of eggs through enrichment with selenium, vitamin D, or omega-3 PUFAs; and
- ✔Promoting food safety by suppressing the presence of salmonella in feed.

Classification, efficacy of additives

The additives considered in this review can all be classified as CAPES (Consumer Acceptable Performance Enhancers). Since administration of antibiotics to laying hens during production is restricted to a single compound, this approach to improving performance or deriving other benefits other than for flocks under veterinary supervision is disallowed and is frequently ineffective under most practical conditions.

All additives must be effective with respect to claimed action. This implies a plausible explanation relating to biological activity. Compounds which fail to meet this standard, which requires published laboratory confirmation of the mode of action, should not be considered for registration by regulatory authorities or commercial adoption by producers. All claims by manufacturers must be substantiated by structured and scientifically valid experiments and field trials.

More on additives: Read about Kemin's recent research on additives. www.WATTAgNet.com/17231.html

PREBIOTICS & CAPES	
Product	Manufacturer
Bio Mos	Alltech
Bio-Saf	Phibro-Prince
CenMos	Cenzone Tech
Integra Mos	Ralco Nutrition
Nu Pro	Alltech

The additives considered in this review can all be classified as CAPES.

Measuring the benefit from additives can be difficult under commercial conditions. Simply comparing two adjacent houses and determining improvements amounting to a few eggs per hen or a small shift in grade cannot be regarded as positive proof of efficacy. Field trials are subject to inherent bias in the selection of flocks and facilities and are also influenced by confounding associated with uncontrollable factors such as microclimate, equipment function, disease exposure in relation to level of immunity and management.

The number of hens in a flock has no bearing on the evaluation of an additive. A non-significant difference in a parameter is still non-significant even if the trial involved single comparisons involving hundreds of thousands of hens. It is, however, possible to increase sensitivity by replication which allows application of statistical techniques to evaluate the significance of differences in the parameters which are measured.

It is important to be able to analyze feed to determine the level of an additive, especially when conducting trials. Some compounds including botanicals, which cannot be assayed directly, present problems in determining the precise level of active ingredient in diets. The use of dye-impregnated metal particles as used in the Micro-Tracer™ system permits simple qualitative and semi-quantitative indications of the presence of a specific additive in a diet. Additives must be compatible with other ingredients in the diet and physical characteristics should allow for even distribution through the mix given the restraints of many small feed mills operating in the egg industry.

Evaluating the financial benefit from additives

The value of an additive can be determined by a benefit to cost analysis. Incremental revenue from increased egg yield, egg mass or grade, improved feed conversion efficiency or a reduction in mortality or downgrades

WEBSITES OF MANUFACTURES OF ADDITIVES	
A/B Vista	www.ab-vista.com
Adisseo	www.adisseo.com
Alltech	www.alltech.com
Alpharma	www.alpharma.com
Biomin	www.biomininc.com
Bioproton	www.bioproton.com
ChemGen	www.chemgen.com
Cenzone Tech	www.cenzone.com
Chr. Hansen	www.chr-hansen.com
Danisco	www.danisco.com
Diamond V	www.diamondv.com
DSM	www.dsm.com
Kemin	www.kemin.com
Lohmann Animal Health	www.lahinternational.com
Micro-Tracers	www.microtracers.com
Novus	www.novus.com
Phibro Animal Health	www.phibroah.com
Prince Agri Products	www.princeagri.com
Ralco Nutrition	www.ralconutrition.com
Star Labs	www.primalac.com
Zinpro	www.zinpro.com

Visit the websites for more information.

QUALITY ENHANCEMENT:	
Product	Manufacturer
DHA-Gold	Novus
Kemglo	Novus
Oroglo	Kemin
HyD	DSM
Yellow-ZO	Lohmann Animal Health

Additive value can be determined by analysis.

which all contribute to enhanced revenue, represent the benefit side of the equation. The cost component includes the purchase of the additive, maintaining inventory, quality control procedures and analyses. Generally a benefit to cost ratio exceeding a value of 4 will justify use of an additive. In some cases, additives are evaluated on the basis of product differentiation, which is important with specialty or enriched eggs.

Additional nutrients including bioplexed or chelated minerals, vitamin supplementation beyond the nutritional requirements of flocks or specific ingredients containing nutrients such as DHA, which can be transferred to the egg, can be considered for specific markets. Carotenoid additives, which enhance yolk pigmentation, represent an additional dietary cost which should be considered among the broad range of organoleptic benefits as perceived by consumers of specialty eggs.

Enzymes

Enzymes are now accepted as beneficial additives. Initially only phytase preparations were added to diets and then only where mandated by regulatory authorities to reduce phosphorus excretion with environmental implications. With an escalation in the cost of inorganic phosphate supplements during the late 1990s, emphasis shifted to adding phytase enzymes to reduce dietary cost. The unprecedented increase in the price of corn, soybean meal and other ingredients during 1998 and again in 2008 led to the general adoption of broad-spectrum enzyme mixtures formulated to enhance the availability of energy and amino acids in ingredients.

The use of enzymes contributes materially to a reduction in feed and hence production cost when the price of ingredients is high. Due to the diversion up to one-third of the U.S corn crop to ethanol production, increased demand from China and unseasonable drought on production of grains in Eastern Europe and rain in Canada and Argentina, possibly as a result of the La Niña phenomenon, grain prices have increased materially from mid-2010 and will be higher in 2011. Accordingly, the value of enzymes will increase.

Nutritionists use a number of approaches in determining how diets are formulated when enzymes are used. One strategy is to formulate diets with degraded nutritional specifications for energy and critical amino acids.

ENZYME COMBINATIONS:	
Product	Manufacturer
Alltech SSF	Alltech
Avizyme	Danisco
Cenzyme	Cenzone Tech.
Hemicell	Chemgen
Natuzyme	Bioproton
Reap 4M	Phibro/Prince
Rovabio	Adisseo

The use of enzymes contributes to a reduction in feed and production cost when the price of ingredients is high.

PROBIOTICS-PREBIOTIC COMBINATIONS	
Product	Manufacturer
Avicorr Plus	Danisco
Bactocell(Canada)	Lallemand
Biomin C-Ex	Biomin
Proflora	Alpharma

Probiotics represent the fastest growing category of additives for flocks producing eggs.

ANTI-MYCOTOXIN COMPOUNDS In the U.S.	
Product	Manufacturer
Integral	Alltech

Mycotoxicosis is a recurring problem

An alternative is to provide dummy values for enzyme mixtures based on controlled trials which demonstrate enhancement of energy and amino acid content of the major ingredients.

Another approach is to increase the energy and amino acid values for ingredients in the matrix as determined by published data relating to enzyme additives.

Under current prevailing ingredient costs, enzyme supplementation costing approximately $1.00 to $1.50 per ton may reduce feed cost by up to $10 to $15 per ton representing 2c to 4c per dozen. If corn escalates to $6 per bushel and soybeans to $12 per bushel, savings will be increased proportionately.

Prebiotics and probiotics

Prebiotics, mainly in the form of fermentation extracts containing oligosaccharides have been shown to have a number of benefits in the intestinal tract of chickens. Mannanoligosaccharides will agglutinate pathogenic bacteria with Type-1 fimbriae including many salmonella serotypes. A second benefit is associated with modifying the intestinal flora to increase the proportion of beneficial organisms including lactobacilli.

Probiotics, which comprise either the spores or active cultures of beneficial microorganisms, represent the fastest growing category of additives for flocks producing eggs. Since most antibiotics are either disallowed or considered to be unacceptable from the standpoint of consumers, probiotics have emerged as beneficial in enhancing production and reducing the occurrence of enterotoxemia associated with the proliferation of Clostridium species in the intestinal tract.

PROBIOTICS	
Direct Feed Microbials	
Product	Manufacturer
Avicorr	Danisco
Avilution	Phibro/Prince
Clostat	Kemin
Cylactin	DSM
GailiPro Tech	Chr.Hansen
Primalac	Star Labs
Poultry Star	Bromin
XPC	Diamond V
XPC green	Diamond V

Probiotics have emerged as beneficial in enhancing production.

Nonspecific enteritis characterized by wet droppings and stained eggs and the emerging condition referred to as focal duodenal necrosis (FDN) respond favorably to direct-fed microbial preparations with or without yeast or other fermentation residues. A number of manufacturers have combined the benefits of prebiotics and probiotics in commercial preparation which are now available and can be fed without restriction.

Antioxidants

Oxidative rancidity of animal fat and the lipid content of diets provided by incorporation of vegetable oils can result in the destruction of vitamins in diets (in vitro). Reducing the potency of vitamins A and E depresses the immune system and hence livability and response to vaccination. Interference with vitamin D can affect shell integrity.

Free radicals produced during oxidation are toxic and will interfere with the function of cell membranes and sub-cellular structures which incorporate lipoproteins. This in vivo action of free radicals at the cellular and sub-cellular levels will degrade performance. A range of antioxi-

ANTIOXIDANTS:	
Product	Manufacturer
Endox	Kemin
Feed Guard	Novus
Rendox	Kemin

A range of antioxidants are available to stabilize fats, oils and animal by-products to avoid both in vitro and in vivo oxidation.

MINERAL SUPPLEMENTS: ORGANICS & CHELATES	
Product	Manufacturer
Availa Mn/Zn	Zinpro
Bioplex Mn/Zn	Alltech
DiaMune Se+Yeast	Diamond
Egg Shell 49	Alltech
Mintrex Mn/Zn/Cu	Novus
Selenium Yeast	Phibro/Prince
Selenium Source AF	Diamond
Sel-Plex SE	Alltech

Mineral supplements help provide a balanced diet.

dants are available to stabilize fats and oils and animal by-products to avoid both in vitro and in vivo oxidation.

Inhibitors of mycotoxins

Mycotoxicosis is a recurring problem and can detract from production if either or both trichothecene toxins and aflotoxins are present. Currently, the FDA has no standards for feed additives which either sequester mycotoxins or contribute to their enzymatic breakdown when added to diets.

If these compounds are available in the U.S., they are generally marketed as "anti-caking agents" with no overt claims of anti-mycotoxin activity made by the manufacturers. Effectiveness of yeast cell wall extracts and enzymatic compounds have been shown with varying intensity under practical conditions in countries where mycotoxicosis is prevalent and use is permitted by regulatory authorities.

Available feed additives for egg production

The practical categories of feed additives suitable for the egg industry are indicated in alphabetical listings in the following series of tables arranged according to category. The lists are not inclusive and any omissions are unintentional. Inclusion of a compound in a specific category does not necessarily represent endorsement of either efficacy or safety but the listings are provided for the guidance and information of readers.

Because of the complexity and wide range of additives available, producers are advised to evaluate products according to the following criteria:

- ✔Documented mode of action;
- ✔Availability of peer-reviewed reports on efficacy and safety;
- ✔Official registration;
- ✔Reputation and reliability of the manufacturer and country of origin of the compound; and
- ✔Projection of benefit to cost ratios using in-company monitoring of results using structured comparisons. EI

PHYTASES	
Product	Manufacturer
Allzyme SSR	Alltech
Finase	A/B Tech
Natuphos	BASF
Optiphos	JBS-United
Phyzyme EXP	Danisco
Quantum	A/B Vista
Ronozyme	DSM

Phytases help poultry utilize more indigestible phosphorus.

Q&A: Egg Nutrition Center's past, present and future in the poultry industry

Director of Research Dr. Don Layman gives overview of the center's work.

Dr. Don Layman was appointed as the Director of Research for the Egg Nutrition Center (ENC), an affiliate unit of the American Egg Board (AEB) in 2009. Dr. Layman assumed this position after retiring as a professor of nutrition at the University of Illinois at Urbana-Champaign. He earned his B.S. and M.S. degrees in biochemistry from Illinois State University and a Ph.D. in human nutrition in 1978 from the University of Minnesota. During his distinguished career Dr. Layman has earned numerous awards from prestigious professional associations, served on editorial boards of peer review journals and functioned in both departmental and college administrative positions, responsible for multi-million dollar budgets.

Dr. Don Layman

Egg Industry: How is the Egg Nutrition Center structured?

Don Layman: The Executive Director of ENC is Dr. Mitch Kanter who has overall responsibility for the administration and management of the Egg Nutrition Center. My position is Director of Research, responsible for evaluation and administration of extramural grants. Other members of the ENC staff include Marcia Greenbaum, Senior Director of Nutrition Education who is responsible for educational programs and outreach, and Michelle Leistiko, Program Manager for Nutrition Education and Communications who is responsible for overseeing the ENC website and monitoring research related to the egg industry. The past year has been a year of change including reorganization and strategic planning with the hiring of Dr. Kanter, Ms. Leistiko, and myself plus movement of ENC from Washington D.C. to Chicago to be closer to the AEB headquarters. Our goal is to make ENC even more efficient and effective for the egg industry.

EI: Could you define some of the objectives of the ENC?

DL: The ENC mission is to be a credible source of nutrition and health science information and the acknowledged leader in research and education related to eggs. We have undertaken a strategic planning process to ensure that our resources, both financial and human are used to the maximum effect to understand the role of eggs in a healthy diet.

EI: What specific projects are under consideration?

DL: Our strategic planning has led us to recognize three major research pillars, as we refer to them. The first is documenting the value of protein especially at breakfast. We believe that eggs eaten at the morning meal have a beneficial effect on body composition and satiety and ultimately long-term body weight. Our second pillar is a renewed

interest in lipid and cholesterol metabolism with a focus on the relationship of dietary cholesterol to risk of cardiovascular disease. Reducing dietary cholesterol continues to be a cornerstone of U.S. dietary guidelines but the published science in support of this relationship is weak and most countries around the world have dropped cholesterol from dietary guidelines. Within this area, we will be considering the individual impact of cholesterol versus saturated fats on metabolism and health. The third area of interest relates

Read what Dr. Layman said at the 2010 Egg Industry Center Forum. www.WATTAgNet.com/15325.html

to nutrient density. The egg is unique as a complete food supplying a balance of essential nutrients including amino acids, vitamins, minerals and energy. We need to better understand the importance of eggs presenting all of these nutrients together in a single food with high bioavailability. We view eggs as a total nutrition package that can be incorporated into healthy diets in many ways.

EI: What are some of the previous contributions of the ENC?

DL: Research sponsored by the ENC/AEB has led to a better understanding that dietary cholesterol is not a primary risk factor associated with cardiovascular disease. The ENC has also sponsored research that led to major discoveries related to the importance of eggs as dietary sources of luetin and choline and the importance of protein at breakfast. These discoveries contribute to our overall understanding about the importance of eggs in our diet. Through the efforts of the ENC during the past 15 years, we have progressed from a point where the American Heart Association recommended a virtual ban on consumption of eggs to their current recommendation that adults can consume seven eggs each week.

EI: Faced with current health problems other than cardiovascular disease, what other areas of research could benefit egg consumption?

DL: We believe that eggs can play an important role in weight control and healthy aging. We are aware that the protein content of eggs when consumed at breakfast helps maintain body composition and satiety. We are continuing this research to better understand how breakfast protein can help reduce body fat and contribute to weight management. We also have continued interest in the role of eggs in providing lutein which is important in protecting against macular degeneration and choline which is importance during pregnancy and early childhood.

EI: What institutions will cooperate with the ENC in the future?

DL: In past years we have funded research projects at

many major universities including Tufts University, University of Connecticut, Wake Forest, Iowa State, Yale, University of Illinois, University of North Carolina and Rutgers. The current annual ENC research budget is approximately $1.1 million which is a tremendous investment by the egg industry and it's my understanding this is largest research budget ever committed by the AEB. Still, it's not a lot of money in relation to the costs of large-scale clinical trials. It's my job to continue to increase the efficiency and effectiveness of how we use these dollars to expand our research efforts at leading universities and through collaborations with other groups and Federal agencies.

EI: What can producers do to protect the image of eggs?

DL: Well, my small piece of that large puzzle are the nutrition and health questions, and I think producers are doing the right things in funding the research programs at ENC. To truly protect the image of eggs we need good science and clear answers about nutrition and health benefits of eggs.

> ***Our strategic planning has led us to recognize three major research pillars: documenting the value of protein; renewed interest in lipid and cholesterol metabolism; and nutrient density.***

EI: How can the industry assist the activities of the ENC?

DL: The check-off funding is the foundation of our research and education programs. Consistent funding of ENC is the most important contribution the industry can make for us to continue these programs and I think producers should be very proud of their investment in the work at the ENC.

EI: Is there any message that you would like to convey to producers?

DL: The scientific studies and professional activities of the ENC have clearly dispelled some long held beliefs relating to eggs. Our on-going research and education programs will continue to clarify the important role of eggs in a healthy diet. EI

PRODUCTNEWS

Diamond V Original XPC

Diamond V offers an all-natural, research-proven nutritional fermentation product, Original XPC™ for the domestic layer industry. According to the company, Original XPC™ is produced using a proprietary biofermentation technology that creates a unique complex of nutritional metabolites. The unique nutritional metabolites in Original XPC™ support digestive health by balancing gut microbiota, gut morphology and the immune response. Inclusion rates for XPC™ are 3 pounds per ton in pullet starter, 2 pounds in the grower/developer and 1.5 pounds in feed for layers. Original XPC™ is available for organic production as OMRI-certified XPC™ Green.

www.diamondv.com

Cumberland Mega Flow External Damper fan line

Cumberland offers the Mega Flow External Damper fan line for use in the ventilation of poultry production facilities. A butterfly style shutter system provides a complete seal when closed for optimum operating performance under extreme levels of static pressure. Side cone panels allow for closer mounting on field installations.

www.cumberlandpoultry.com

SDIX RapidChek® SELECT™ SE test

SDIX, a provider of biotechnology-based products, offers the RapidChek® SELECT™ *Salmonella enteritidis* test system. The test is designed to assist the commercial egg industry comply with requirements for the FDA Final Rule. The immuno-based detection system incorporates a patented phage-based enrichment media to improve specificity and sensitivity of detection.

www.sdix.com

Ex-farm prices up from 2009

Feed cost, pullet depreciation and other fixed and variable costs remain steady.

Don Bell projects an Urner-Barry large Midwest price of 96.1 cents/dozen for August.

Maro Ibarburu, program manager for the Egg Industry Center (EIC) located at Iowa State University released the June-July Statistical Report on August 4.

The current report is summarized for readers of *Egg Industry*.

✔The U.S. estimated cost of production for June 2010 was 58.4 cents per dozen *ex-farm*, 1.4 cents per dozen more than the previous month. The seven-month average production cost for 2010 attained 57.9 cents per dozen, 1.5 cents per dozen (2.5%) less than the 59.4 cents per dozen recorded during the first seven months of 2009.

✔The July *ex-farm* egg price estimated by the USDA-NASS was 52.8 cents per dozen, compared to 42.2 cents per dozen for June 2010 and a seven-month average of 67.6 cents per dozen for 2010 to date.

✔The margin represented by "income minus cost" for July was -5.6 cents per dozen continuing the negative trend from June of -14.8 cents per dozen. For the first seven months of 2010 the average margin was 9.7 cents per dozen. The negative July 2010 margin was equal to the value in July 2009 reflecting the annual seasonal trend.

✔In evaluating the low margin for July, it was noted that feed cost was 35.1 cents per dozen, with pullet depreciation at 8.5 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 values remained virtually unchanged through the first seven months of 2010. Contribution per hen, based on July figures remained negative at -10.7 cents per bird which was an improvement over the -27.3 cents per bird value in June. The cumulative seven-month hen contribution now stands at 126.6 cents per bird.

✔The Urner Barry (UB) simple average price for six U.S. regions, assuming 80% large eggs, was 51.4 cents per dozen for July compared to 44.3 cents per dozen in June 2010. The seven-month simple average UB price was 66.7 cents per dozen.

✔In reviewing retail prices for table eggs, the Bureau of Labor Statistics and the Department of Commerce estimated a June average of 149.4 cents per dozen, 1.9% lower than the May 2010 value of 152.3 cents per dozen but almost equivalent to the 152.9 cents per dozen recorded in June 2009. The simple average retail egg price for the first five months of 2010 was 171.3 cents per dozen.

✔The large to medium grade white egg price spread over six regions was 22.1 cents in July compared to 17.0 cents per dozen in June with an average of 18.2 cents per dozen for the first seven months of 2010. Regional spreads ranged from 19.4 cents per dozen in the Northeast to 25.3 cents per dozen in the South Central region.

✔During July 2010, layer feed averaged $205.40 per ton, which is 2.0% higher than the seven-month average of $201.40 per ton based on six regions. During June the price range among regions was $180.80 per ton in the Midwest rising to $223.00 per ton in California. The differential of $42.20 is equivalent to approximately 9.00 cents per dozen applying realistic industry production parameters

✔For the first seven months of 2010, commercial-pullet strain eggs in incubators has remained almost constant at 39.76 million with a range of 37.5 million in July to 42.9 million in April. The corresponding 2009 value for the first seven months was 37.194 million

✔Straight run hatch for June attained 42.6 million with an average for the first six months of 42.9 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 11-month average of 18.31 million pullets per month for 2010 is 5.6% greater (1.0 million pullets) than the 11-month average of 17.34 million per month for 2009. The 2005 to 2009 monthly average was 16.8 million pullets placed each month.

✔For July 2010, the USDA-NASS estimated the national flock at 280.5 million hens, which is 1.0 million more than in June 2010, following historical trends. Applying the University of California model based on USDA-NASS data for chickens and eggs, it is estimated that the November 2010 flock will attain 220.0 million hens aged less than 72 weeks.

✔This incorporates the assumption of 9% mortality from 20 through 72 weeks of age. As at the end of June 2010, 23.8% of the national flock was over 72 weeks of age. With the exception of March 2010, which was an aberration, the seasonal pattern of a decline in molted flocks from January through April appears to be holding. For the entire year of 2009, an average of 24.7% of the national flock had been molted compared to 31.7% in 2008.

✔Six regions reported a simple average of 24.6% molted hens in July 2010 reflecting all states surveyed by the USDA-NASS. The actual proportion of molted hens in the U.S. varies widely, from 9.5% in the Northeast to 37.0% in California. The seven-month average of 23.6% molted hens in the U.S. flock and differences among regions reflect production costs, revenue for eggs and realization value for spent hens.

✔The most recent estimate of the national table-egg flock for August 2010 is 281.1 million hens. This number is expected to increase steadily to 291.9 million in December. Given current projections of prices which are functions of supply and demand, flock sizes could be trimmed by depletion or increased by retention or molting subject to available capacity including re-caging. Prolonged depression in price beyond current estimates will inevitably result in a decrease in hen numbers since flocks will be depleted at a rate faster than projected.

✔Don Bell projects an Urner-Barry large Midwest price of 96.1 cents/dozen for August with prices in November and December attaining approximately 120.0 cents per dozen. The post-January drop will occur in 2011 with April and May forecast to be 94.1 and 83.0 cents per dozen respectively. The future prices forecast in July have been adjusted by approximately 10 cents per dozen in comparison to projections published in June.

✔The top six egg-producing states with 159.02 million hens represent 57.7% of the total national flock. In descending order these states are Iowa (19.4% of total), Ohio (9.8%), Indiana (8.3%), Pennsylvania (8.2%), California (7.0%), and Texas (4.9%). States reporting to the USDA-NASS represent 99.1% of all hens producing table eggs.

✔Rate of lay for the first six months of 2010 attained 76.0%. This is higher than in 2009 during which an average of 75.3% was recorded. The positive difference of 0.7% in production level is equivalent to a daily volume approaching 5,500 cases. Average rate of lay is a function of weighted flock age and is influenced by climate.

✔During June 2010, 6.206 million cases of eggs were broken under Federal inspection, which is 8.7% more than in May and 4.1% more than in May 2009. For the first six months of 2010, egg breaking was up by 1.9% over the corresponding period in 2009. For the year to date, 31.1% of the 107.419 million cases produced have been broken compared to 30.8% for the entire year of 2009. It is noted that the proportion of eggs broken has steadily declined from the 2005 high of 35.1% to a projected value of 30% for 2010.

✔The revised egg consumption value for 2010 is projected to be 247.1 per capita, almost 0.3%, lower than the 247.7 eggs per capita recorded in 2009. Over the past seven years the highest per capita consumption of 257.8 eggs was recorded in 2006.

✔According to the USDA Foreign Agricultural Service, 847,000 cases of shell eggs were exported during the first five months of 2010 with Hong Kong (38% of export volume), Canada (12%) and China (6%) representing the most significant importers. Shipments of shell eggs for the first five months of 2010 represented 0.9% of U.S. production.

✔Exports of egg products as shell equivalents represented 1,876,000 cases for the first five months of 2010, equivalent to an average of 2.09% of U.S. production.

✔Combining shell eggs and egg products, total exports during the first five months of 2010 represented the equivalent of 2.72 million cases or 3.04% of U.S. production. EI

US avian veterinarians review health topics

At their biannual meeting, the members of the Avian Veterinarians in Egg Production (AVEP) reviewed a number of items which are of critical concern to health and production.

The FDA Final Rule took precedence as well as the volume of testing that is overwhelming many state laboratories. Topics discussed include the following:

- ✔ The FDA will now accept the NPIP isolation and identification procedure, contributing to harmonization and avoiding conflict.
- ✔The National Veterinary Services Laboratory in Ames, Iowa, has agreed to process SE specimens submitted in accordance with the FDA rule to expedite decisions concerning the possible presence of the pathogen.
- ✔Confirmation services are also provided by the Salmonella Reference Center at the University of Pennsylvania.
- ✔PCR technology will be necessary to screen samples and hopefully be recognized by the FDA as the current egg testing protocol imposes both risks and costs. The University of Pennsylvania is using a specific Applied Bio Systems for this procedure under a provisional test scheme.
- ✔A quality assurance training program for poultry handling and transport has been developed and is under testing. A video and training manual has also been prepared and graduates of the program will be certified after demonstrating competence in moving spent fowl, chicks, broilers, and turkeys under regular and emergency conditions
- ✔The USDA FAST (Federal and State Transport) Eggs Program was reviewed. A number of states in the Midwest have adopted the provisions of the program.

Additional information on critical topics is available from members of the AVEP, including *Egg Industry's* editor, Dr. Simon M. Shane.

UV light to treat contaminated egg shells

USDA-ARS scientists have recently published on the application of ultra violet light to inactivate *Salmonella enteritidis* (SE) on egg shells. Studies were conducted involving the inoculation of egg shells with SE and subjecting the shell surfaces to UV irradiation over periods of 1 to 30 seconds.

Significant reduction of SE was obtained after 20 seconds of treatment with a lamp generating a dose of 23.6 J/cm2 and the radiation of the shell surface had no effect on internal quality perimeters.

However, in the event of surface contamination from fecal contact during passage of the egg through the cloaca, existing washing installations operated at recommended temperatures (115-125F) using a chlorine sanitizer at a concentration ranging from 100 to 150 ppm at a pH of 10 to 12 will effectively decontaminate shells at processing rates of up to 500 cph. EI

Advances in nutrition

Trends in ingredients and additives for egg-laying flocks.

By Simon M. Shane

Presentations at the 2010 Poultry Science Association meeting in Denver, Colo., documented advances and trends in feeding U.S. flocks producing table eggs. Interpretive reviews of significant papers are provided dealing with the benefits of additives, supplements and new ingredients.

DDGS

With the national trend towards incorporation of DDGS in diets for egg-producing flocks, there has been extensive research on appropriate levels of incorporation and the effect of enzymes to enhance nutrient value. With the escalation in cost of corn attributed in large measure to diversion of up to one-third of the U.S. crop into ethanol, DDGS, the byproduct of this process must obviously be used despite the inferiority in energy content and undesirable physical characteristics impeding transport and mixing. Previous work conducted by Professor Sheila Scheideler of the University of Nebraska, supported by field experience, has shown that levels of 10% to 15% of diets does not degrade performance parameters or egg quality and can reduce feed cost. In a study conducted at the University of Kentucky, diets with either 15% or 23% DDGS were evaluated with and without a commercially available enzyme (Allzyme® SSF).

Egg production and quality were evaluated over 36 weeks of production from 17 weeks of age onwards in Hy-Line brown-feathered hens. The energy content of diets was 2,800 Kcal/kg and 2,877 Kcal/kg respectively for the diets containing 15% and 23% DDGS. Diets contained suboptimal level of available phosphorus (0.17% and 0.2%) which is inconsistent with commercial practice. Dietary treatment did not affect feed conversion but feed intake was significantly decreased compared to a corn-soy control during the early and mid-part of the production cycle. Addition of enzyme increased albumen content and shell weight at 20 weeks compared to non-supplemented diets containing DDGS. Haugh unit values were increased by DDGS post-peak and at the mid-point of the experimental period. The study confirmed the suitability of up to 23% inclusion of DDGS in layer diets and that some production parameters were enhanced by enzyme supplementation in diets with suboptimal available phosphorus.

Listen to a podcast about research on DDGS nutrition: www.WATTAgNet.com/11272.html

Algae

Studies conducted on algae at the University of Tehran demonstrated that inclusion of Spirulina platensis in diets at levels ranging from 1.5% to 2.5% improved yolk pigmentation compared to a non-supplemented wheat-soybean meal control diet. Addition of the Spirulina additive did not affect egg production parameters. Optimal yolk color was obtained at the 2% inclusion level.

Strength of the tibial bones of hens was improved by inclusion of an algae supplement although the levels incorporated in diets (10% to 15%) are inconsistent with commercial practice. The authors at Brigham Young University in Utah did not provide a justification for their trial or define the mechanism by which presumably high DHA content of the diets increased bone density.

Supplementation of eggs with co-extruded flaxseed and pea meal was evaluated by scientist at the University of Alberta. Inclusion of 7.5% or 15% of the commercial product (LinPro™) resulted in total omega-3 polyunsaturated fatty acid levels in yolk of 344 mg/egg within seven days. Both plasma levels and analysis of egg yolk corresponded to dietary treatment.

Animal byproducts

Carcass meal is still included in the diets of flocks producing generic eggs where available and justified by considerations of ingredient cost.

Studies conducted at the University of Tabriz in Iran demonstrated that 2% byproduct meal containing oil had no deleterious effect on either performance of egg quality. At higher levels (4%, 6% and 8%) egg weight, production and feed intake were depressed although shell thickness and albumen weight were unaffected. Shell thickness and yolk weight were decreased at the higher levels of poultry byproduct meal. It is noted that non-stabilized animal protein ingredients containing in excess of 8% fat may undergo oxidative rancidity.

It is necessary to stabilize animal protein ingredients with an antioxidant to prevent the formation of free radicals which can destroy fat-soluble vitamins in the diet, inhibit immune response and other metabolic processes by disrupting the function of sub-cellular components.

Hemp seed

Hemp seed meal and hemp oil are available in the western states of Canada although as yet Federal regulations prevent cultivation of this crop in the U.S. Hemp seed contains 30% oil which is rich in alpha-linolenic acid (ALA). Studies conducted at the University of Manitoba showed that diets containing up to 12% hemp oil or 20% hemp seed did not affect yolk flavor or aroma

and contributed to increased intensity of yolk color.

Nutrient value of ingredients

Evaluating the digestibility of amino acids in ingredients using standardized amino acid digestibility procedures was conducted at the University of Illinois. The applicability of the precision-feed cecectomized rooster assay was compared to the standardized ileal amino acid chick assay using DDGS, meat and bone meal and poultry byproduct meal. Although there were slight differences between the techniques among the samples of ingredients assayed, there were no consistent differences between the methods used to calculate standardized amino acid digestibility.

Enzymes

The egg industries of the world have progressively adopted enzyme supplementation of diets in an attempt to reduce cost in the face of escalating prices for corn and soybean meal. Studies conducted at the Federal University of Paraiba in Brazil evaluated a commercial enzyme component containing 6-phytase, carbohydrases and proteases in diets feed to laying hens.

The product (Rovabio™ Max AP) was evaluated in diets with reduced energy and amino acid content. Beneficial effects were noted with respect to egg weight and specific gravity. Although no financial data was presented it is presumed that in the absence of any reduction in performance parameters, less expensive reformulated diets would have contributed to an incremental return.

The effect of an enzyme supplement containing phytase and proteases, amylase and xylanase (Avizyme 1502) was evaluated in laying hens at 25 to 52 weeks of age by scientists at the University of Nebraska. Diets were also supplemented with a phytase enzyme (Phyzyme®). The enzyme supplements were added to diets containing DDGS or meat and bone meal with eight dietary treatments arranged in a 2x2x2 factorial incorporating two levels of energy with and without enzyme supplementation.

Reducing metabolizable energy and available phosphorus content of diets had no negative effect on egg production or quality when diets were supplemented with the enzyme. As with previous trials under controlled conditions and confirmed by field experience, significant reductions in the cost of diets can be achieved using judicious reduction in nutrient specifications due to incorporation of enzyme in diets.

Probiotics and prebiotics

The beneficial effect of probiotics and prebiotics have been evaluated extensively for broiler and turkey production, mainly to displace antibiotic performance enhancers, which function by suppressing deleterious components of intestinal flora including

Clostridiumspp. A commercial direct-fed microbial (DFM) product containing Bacillus subtilis strain PB6 (CloSTAT) was added to the diet fed to 136,000 hens in a single house. The adjoining house served as a control. Initiation of the trial commenced 3 weeks before inducing molt and continued for 34 weeks. Supplementing the diet with the probiotic increased hen-housed egg production by 1.9 eggs and reduced mortality by 1.5%.

It is emphasized that this trial was conducted with only one treatment and a control and accordingly the results cannot be subjected to statistical evaluation. Replication is necessary to determine whether any numerical differences are significant and hence repeatable.

Micro-ingredients

The effect of copper supplementation on feed conversion and maximum egg mass was evaluated in a trial conducted at the University of Chapingo in Mexico. Optimal dietary copper content was calculated to be 130 ppm with respect to feed conversion efficiency and 117 ppm/kg for optimum egg mass. Profit was maximized at 120 ppm. Copper supplementation resulted in increased shell thickness compared to a non-supplemented control but albumen height and Haugh units (which are related) were reduced at high (plus 200 ppm) levels of copper supplementation.

Bioplexed minerals have been promoted as superior to inorganic mineral supplements. Organic sources of copper, manganese, iron, zinc in the form of proteinates (Bioplex) and selenium yeast (Sel-Plex™) were compared with diets supplemented with inorganic minerals at suggested NRC levels at the University of Kentucky. The form of the mineral did not affect weight gain, feed intake or hen day production over the 28 week experimental period. There was not measurable improvement in shell breaking strength, specific gravity or proportion of shell to egg weight as a result of supplementation. Organic minerals provided at 50% of the NRC requirement supported higher egg production compared to the basal diet suggesting improved utilization from the mineral proteinates.

A study from the University of Nebraska concluded that selenium, provided in the form of selenomethionine (Sel-Plex™), contributed to improved strength of the vitelline membrane and total selenium content of eggs was enhanced compared to inorganic selenium supplementation. EI

Rovimix® Hy•D®

NO MATTER THE AGE

ROVIMIX® Hy-D® MAKES HENS STRONGER

Whether a pullet or a mature hen, peak lay performance requires a well developed skeletal frame built with only the strongest bones. Research indicates that bones with the best strength come from diets supplemented with ROVIMIX® HY-D®.

Science suggests that ROVIMIX® HY-D® provides birds with all the 25-hydroxyvitamin D_3 they need to develop and maintain bones that can withstand the stresses of egg production. In young pullets, stronger bones are necessary for optimal lay persistence which can translate into more eggs. As the hen ages, ROVIMIX® HY-D® will help promote better egg shell quality.

To learn about how ROVIMIX® HY-D® can strengthen your flock, call your DSM Nutritional Products Account Manager or visit our website at www.unlimitednutrition-na.dsm.com.

Quality for Life™

Unlimited. DSM

www.unlimitednutrition-na.dsm.com

HD09C