

THE EGG INDUSTRY CENTER:
CONTRIBUTING TO A SUSTAINABLE EGG SUPPLY
2014 REPORT



Egg Industry Center
IMPACT
REPORT

**FOR THE GOOD
OF THE INDUSTRY**

ESTABLISHED IN 2008, THE WORK OF THE EGG INDUSTRY CENTER IS DRIVEN BY ITS MISSION TO ADD VALUE TO THE EGG INDUSTRY BY FACILITATING RESEARCH AND EDUCATION THROUGH NATIONAL AND INTERNATIONAL COLLABORATION. THROUGH ITS MANY SUCCESSFUL INITIATIVES — INCLUDING DIRECT AND SPONSORED RESEARCH, EDUCATIONAL OUTREACH, MONTHLY ECONOMIC REPORTS AND THE ANNUAL EGG INDUSTRY ISSUES FORUM — THE CENTER HAS QUICKLY GAINED A GLOBAL REPUTATION AS CREDIBLE EXPERT, VALUABLE KNOWLEDGE RESOURCE AND EXCEPTIONAL INDUSTRY PARTNER.

Focused on the needs of egg producers, processors and consumers, the center employs a collaborative approach to addressing current and emerging issues, disseminating critical information and exploring ways to ensure a sustainable future for one of the world's most important industries.

Of course the important work described on this and the following pages would not be possible without the support of many partners and friends who share the center's vision for a thriving egg industry — now and well into the future. Through their generous contributions, these visionary partners established the Egg Industry Center Endowment, which supports the center's many research and outreach efforts. New and continued support of this worthwhile investment is critical to the fund's growth, which ultimately enhances the work of the center and the advancement of the U.S. egg industry.

We invite you become an integral part of the important work described in this report by supporting the Egg Industry Center Endowment. Contact either person listed below to join an increasing number of industry contributors who are stepping forward to ensure the future of a thriving egg industry.

DENNIS CASEY, CHAIRMAN
Egg Industry Center Advisory Board 515-964-0786

HONGWEI XIN, DIRECTOR
Egg Industry Center 515-294-4240

**"THE EGG INDUSTRY
CENTER MAKES AN
INCREDIBLE CONTRIBUTION
TO THE INDUSTRY**

through its research, statistical reporting and scientific expertise. The 50-Year Environmental Footprint Study, conducted by the center, has tremendously helped the American Egg Board (AEB) promote the Incredible Edible Egg and drive consumer demand for eggs and egg products. For three years now, AEB has financially supported the Egg Industry Center's monthly statistical report, which is of great value to the entire egg industry. AEB's programs are stronger due to the expertise and knowledge housed within the Egg Industry Center."

— Joanne C. Ivy, president and CEO,
American Egg Board



IN REFLECTING ON THE MANY SUCCESSFUL INITIATIVES of the Egg Industry Center this year, I am grateful for the enduring support of our many partners and their investment in the center's mission to advance the egg industry through groundbreaking research, educational outreach, timely information and support of tomorrow's leaders.

As you'll see on the pages that follow, the center's thoughtful stewardship enabled the center to reach new heights in 2014; especially in forum attendance and the Research Grant Program. The grant program award, made possible by the growth of the Egg Industry Center Endowment, will support an exciting new research project that promises to bring new discoveries and information around keel bone abnormality or damage, a critical issue affecting laying hens worldwide.

Perhaps most thrilling in 2014 was the national media coverage and international interest in the center's landmark study that quantified the egg industry's increased efficiencies and shrinking environmental footprint over the last 50 years. While this exposure elevated the center's credibility as an industry expert, more importantly, it resulted in far-reaching benefits for the egg industry itself: an enhanced image among consumers.

As the center's visibility and reputation as a valuable industry resource continues to grow, I am mindful of our responsibility to ensure the center is deserving of this distinction every day. Thank you for your interest in the center's endeavors and for your continued support.

Hongwei Xin

Iowa Egg Council Endowed Professor,
Distinguished Professor of Agriculture and
Biosystems Engineering and Animal Science,
Director of the Egg Industry Center, Iowa State University



HONGWEI XIN

In May 2014, Iowa State University honored Hongwei Xin, director of the Egg Industry Center, as its Charles F. Curtiss Distinguished Professor in Agriculture and Life Sciences. The honor recognizes exemplary performance in research or creative activities as reflected by a national or international reputation in the faculty member's discipline.

ADVANCING THE EGG INDUSTRY THROUGH APPLIED RESEARCH

ASKING CRITICAL QUESTIONS, SEPARATING FACT FROM FICTION AND MAKING NEW DISCOVERIES. EACH OF THESE ENDEAVORS IS ESSENTIAL TO THE ADVANCEMENT OF THE EGG INDUSTRY. WHETHER IT'S TESTING HYPOTHESES OR MAKING NEW OBSERVATIONS ABOUT EXISTING FACTS, THE EGG INDUSTRY CENTER IS COMMITTED TO SCIENTIFIC RESEARCH THAT IS APPLICABLE TO THE U.S. EGG INDUSTRY'S CURRENT AND EMERGING ISSUES.

PROJECT UPDATE: IMPACT OF THE 50-YEAR ENVIRONMENTAL FOOTPRINT STUDY

It's not often that good news is big news, but the results of a landmark study released last fall by Egg Industry Center Director Hongwei Xin and colleagues gained global attention — within the egg industry and in the general media. Finding that the egg industry's environmental footprint has decreased drastically since 1960, the study provided useful information to industry stakeholders and enhanced the industry's image among consumers.

The research team employed life cycle analysis to quantify advancements in the egg industry's production, performance and environmental impact from 1960 to 2010. The comprehensive, national study found that while egg production increased to keep pace with the growing U.S. population over the 50-year span, the industry's environmental footprint shrank significantly. Among the findings: Compared to 1960, today's hens eat just over half of what they did in 1960 and drink 32 percent less water, and egg production emits 71 percent less greenhouse gas.

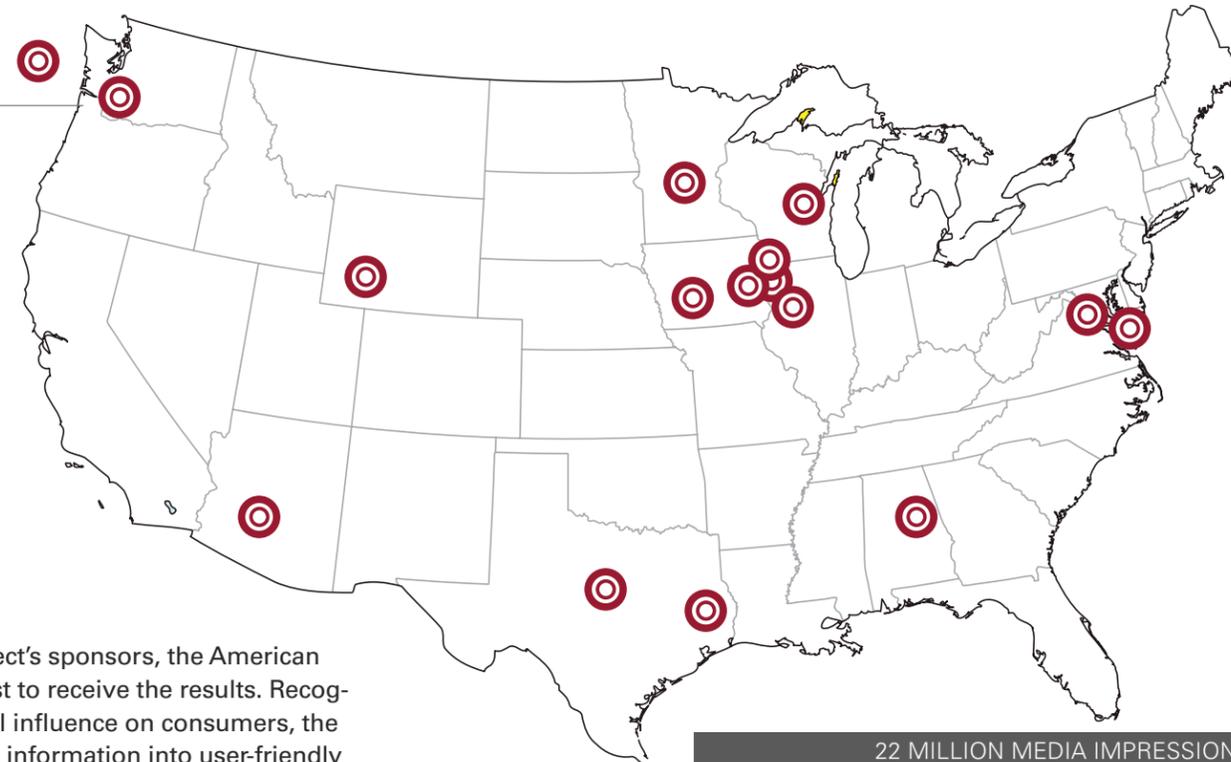
"It's a great story for the industry in that they are really doing a very good job producing wholesome protein with reduced resource input," says Xin.

As one of the project's sponsors, the American Egg Board was first to receive the results. Recognizing the potential influence on consumers, the AEB translated the information into user-friendly info-graphics and distributed the information to media. **As of September 2014, the study has generated more than 22 million media impressions, and messaging around the industry's environmental impact continues to spread.**

"We are very pleased to see the results have received this sort of attention. It benefits the industry in its reach to the consumer, and it means the work we are doing here is making an impact," says Xin.

In addition to quantifying efficiencies gained through technological advancements over the years, researchers also identified areas for future improvement that could further mitigate the industry's environmental footprint: feed efficiency and manure management.

"The study has given the industry a better image and has provided the industry with areas in which to continue advancing and improving," says Xin. "This is very much in line with what the Center is designed for: serving the needs of the egg industry."



22 MILLION MEDIA IMPRESSIONS

NBC COVERAGE: MORE THAN 130,000 VIEWERS

IN THE WORKS: CURRENT EGG INDUSTRY CENTER RESEARCH PROJECTS

The Egg Industry Center continues to be actively involved in identifying information gaps around current issues and providing much needed information through scientific research. The intention is to provide industry stakeholders with objective data on which to base decisions that affect their livelihoods.

Comparing Housing Systems

The center is collaborating with universities, industry and the U.S. Department of Agriculture to study the sustainability of three types of laying hen housing systems: conventional cage, enriched colony and cage-free aviary. The study is sponsored by the Coalition for Sustainable Egg Supply.

Focusing on Design

Recognizing that optimal housing design is fundamental to the well being of birds and producers, researchers are experimenting with the placement and requirement of scratch pads, perches and feeder space.

"THIS WAS A BOLD, PROACTIVE UNDERTAKING FOR THE INDUSTRY,

and United Egg Producers could not think of anyone better to work with than Dr. Xin and his team. The environmental footprint study was a landmark project, with the results helping to elevate the egg industry in the eyes of those who wish to challenge our credentials. The report is comprehensive and rigorous and has allowed the industry to add significant depth to our communication with key stakeholders, including consumers, by underpinning our story with scientific rigor. I have no doubt that this report will continue to provide enormous value long into the future, delivering results in areas that we cannot even predict."

— Chad Gregory, president and CEO,
United Egg Producers

Illuminating Facts

The center is in the midst of two studies on lighting. The first study examines the effects of LED lighting on the production performance and behavior of laying hens. Researchers aim to determine whether scientific data align with anecdotal claims that LED lighting calms the birds and increases productivity.

The second study examines laying hens' preferences for different patterns and intensity of light. Providing birds with different lighting options, researchers observe where the birds gravitate to eat, rest, lay eggs and for other activities. Study results are expected to provide objective data around lighting and bird welfare.

RESEARCH GRANT PROGRAM AWARDS
TIMELY STUDY FUNDING

Keel bone damage in laying hens is a major, international concern. So much so that the first international workshop on keel bone damage in commercial laying hens was held April 2014. Estimated to afflict more than 50 percent of birds in commercial facilities, keel bone damage is an immediate animal welfare and productivity issue. The Egg Industry Center is proud to announce that this year's Research Grant Program Award will support a two-year study exploring the "CAUSES OF KEEL BONE ABNORMALITIES IN LAYING HENS HOUSED IN ENRICHED COLONY CAGES."

The Research Grant Program Award is funded by the Egg Industry Center Endowment, and fulfills a major goal of the Egg Industry Center: to serve as a non-legislative, perpetual funding source for research projects focused on key production and processing issues facing the egg industry. Thanks to the contributions of its many supporters, the endowment's return on investment yielded a grant award in excess of \$84,000 this year.

The project's overall objective is to evaluate the causes of keel fracture and curvature in laying hens housed in enriched colony cages from behavioral biomechanical and anatomical perspectives. Keel abnormalities not only raise questions about animal welfare concerns due to pain, they have also been linked to production issues such as increased mortality and reduced egg production and quality.

Until now, the majority of research on keel abnormalities has concerned aviary systems, the thought being that keel damage is caused mostly by collisions with housing furnishings. However, the high incidence of reported keel damage in enriched colony systems — a more restrictive environment where flight and collisions are less likely — raises new questions worthy of investigation.

Researchers will place tri-axial accelerometers into a custom made vest, which will be worn by each bird. Tri-axial accelerometers measure the energy forces experienced at the moment of injury.



COMMERCIAL LAYING HENS AT RISK FOR KEEL BONE ABNORMALITIES

Combined with video surveillance, the data should identify behavioral correlates of keel fractures and curvatures within enriched colony cages and provide hypotheses on how to improve housing systems to prevent such injuries.

Makagon's research is especially relevant as the egg industry undergoes dramatic changes in the housing of birds in response to consumer interest and legislative movements. The study is expected to provide valuable, objective data stakeholders can use to make informed comparisons on available housing systems.

ABOUT THE EIC RESEARCH
GRANT PROGRAM

The Egg Industry Center Research Grant Program is a highly competitive process in which proposals are selected for funding based on scientific merit and relevance to the top current and emerging issues in the egg industry. Makagon's proposal was selected from almost two-dozen entries, which highlights the critical need for expanding this valuable program.

The Research Grant Program is funded through the Egg Industry Center Endowment, which is supported by many valued contributors who understand the need to research current industry issues and who are dedicated to ensuring a thriving future for the egg industry and its stakeholders. As support for the endowment continues to grow, the center aims to increase the number of projects funded each year.



KEEL BONE ABNORMALITY

"THE VISION FOR THE EGG INDUSTRY CENTER GREW FROM THE REALIZATION WE HAD TO SUSTAIN THE ABILITY TO RESEARCH THE ESSENTIAL QUESTIONS FACING EGG ENTERPRISES. IT IS WONDERFUL TO SEE THE EGG INDUSTRY CENTER ALREADY IN THE RESEARCH GRANT AWARD MODE; WE NEED TO INCREASE THE ENDOWMENT SO WE CAN DO MORE TO MEET THE NEEDS OF EGG FARMERS AND EGG CONSUMERS."

— KEVIN S. VINCHATTLE,
CEO, Iowa Poultry Association
and executive director,
Iowa Egg Council

71
50
32
27



DISCOVERIES:

71% DECLINE IN GREENHOUSE GAS EMISSIONS RELATED TO EGG PRODUCTION FROM **1960-2010**, TODAY'S HENS EAT JUST OVER **50%** OF WHAT THEY DID IN **1960** AND CONSUME **32%** LESS WATER WHILE PRODUCING **27%** MORE EGGS [PER DAY] AND LIVING SIGNIFICANTLY LONGER.

31 STATES REPRESENTED AT THE EGG INDUSTRY ISSUES FORUM

OVER

160

MILLION LAYERS REPRESENTED AT EGG ISSUES FORUM

OWNERS OF

90%

OF THE U.S. LAYER FLOCK SERVED VIA ECONOMIC REPORTING

MEDIA IMPRESSIONS FROM THE ENVIRONMENTAL FOOTPRINT STUDY

22 MILLION

1,000+

WORLDWIDE RECIPIENTS OF MONTHLY MARKET REPORTS

14 COUNTRIES TOUCHED BY EIC OUTREACH EFFORTS

WELL NETWORKED AND WELL INFORMED, THE EGG INDUSTRY CENTER IS A TRUSTED SOURCE OF TIMELY AND ESSENTIAL INDUSTRY INFORMATION. WHETHER IT'S ECONOMIC REPORTING CRITICAL TO DAILY OPERATIONS OR RESEARCH AND SYMPOSIA ON GLOBAL ISSUES DRIVING THE INDUSTRY'S FUTURE, THE CENTER SERVES AS A CONDUIT THROUGH WHICH ALL STAKEHOLDERS CAN EASILY KEEP ABREAST OF THE IMPORTANT ISSUES AND ACCESS INFORMATION MOST APPLICABLE TO FURTHERING THEIR SUCCESS.

**EGG INDUSTRY ISSUES FORUM
NEW LEARNING FORMATS APPEAL TO RECORD
NUMBER OF PARTICIPANTS**

Attendance reached an all-time high at this year's Egg Industry Issues Forum, almost doubling the number of participants since the center started the annual event six years ago. Coming from 22 states, forum participants represented all facets of the egg industry including allied industry, academia, associations and media. Producers in attendance represented operations housing more than 50 percent of the U.S. egg-laying flock.

"It's exciting to watch the trend and see how the forum has grown over the years," says Lesa Vold, communications specialist for the center. "Each year, we look forward to working with industry to maintain the quality of this important program."

Bringing members of industry together to network with other professionals and to learn from experts about current and emerging issues is an important part of the center's work to keep industry informed and provide for professional growth.

Topics addressed at this year's forum included consumer trends and concerns; the high cost of focal duodenal necrosis (FDN); comparison research on housing systems; and the economic status of the European Union egg industry.

Post-forum survey results showed that 87 percent of respondents agreed they could immediately apply what they learned to their own operations.

"I like the fact that the forum focuses on current events affecting the egg industry and features speakers from within the industry discussing real life experiences. It's a good mix when added to the academic research project discussions," says Tom Silva, vice president of operations at J.S. West Milling Company.

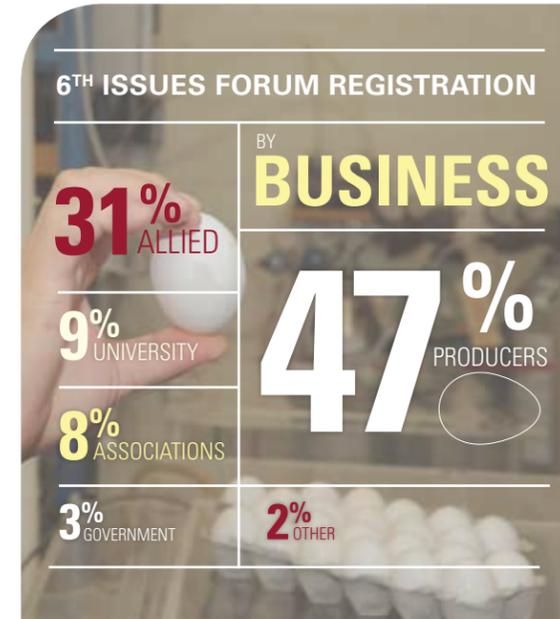
As the forum expands its reach and reputation, the center explored new ways to add value to the egg industry. This year, two new features were added to the event:

Chore-Time Tour

Forum participants toured the headquarters of Chore-Time, a company known for its poultry and egg production systems. Tourists learned about product and innovation systems, the application of lean management techniques and global customer service systems.

"I THINK THE FORUM IS A STEP-UP FROM OTHER MEETINGS. IT TALKS ABOUT CURRENT INDUSTRY ISSUES AND PROVIDES INFORMATION I CAN USE."

– ANDREW KALDENBERG,
COMPLEX MANAGER,
ROSE ACRE FARMS



FDA Food Defense Workshop

The Forum hosted a hands-on workshop addressing written food defense plans, a proposed requirement of the Food Safety Modernization Act. Led by officials from the Food and Drug Administration, participants drafted their plans with assistance from the experts.

Due to the positive response to this year's program enhancements, a tour and workshop will also be included in the 2015 forum, scheduled for the week of April 6th in Des Moines, Iowa.

"A lot of topics will result from suggestions from this year's participants and the center's board of directors," says Vold. "We are here to serve the industry so it makes sense to address timely topics that participants feel will add the most value."

ECONOMIC REPORTING

Each month, **MARO IBARBURU**, ASSOCIATE SCIENTIST AND BUSINESS ANALYST at the



center, distributes a series of three market reports to an email list representing over 90 percent of the industry's layers. These economic reports — which provide data on layer feed price and cost, flock statistics and projections on U.S. flock size and egg price — enable readers to understand their current position in the marketplace and translate that knowledge into strategic business decisions.

Following a similar structure each month, the reports are the result of Ibarburu synthesizing and interpreting vast amounts of data from multiple industry sources then supplementing the data with information not available elsewhere. The finished reports are a reliable source of information in which readers can quickly glean the information most relevant to them. The more than 1,000 recipients of the report worldwide include egg producers, allied industries, academic communities, government agencies and consultants.

EXTENDING OUR REACH

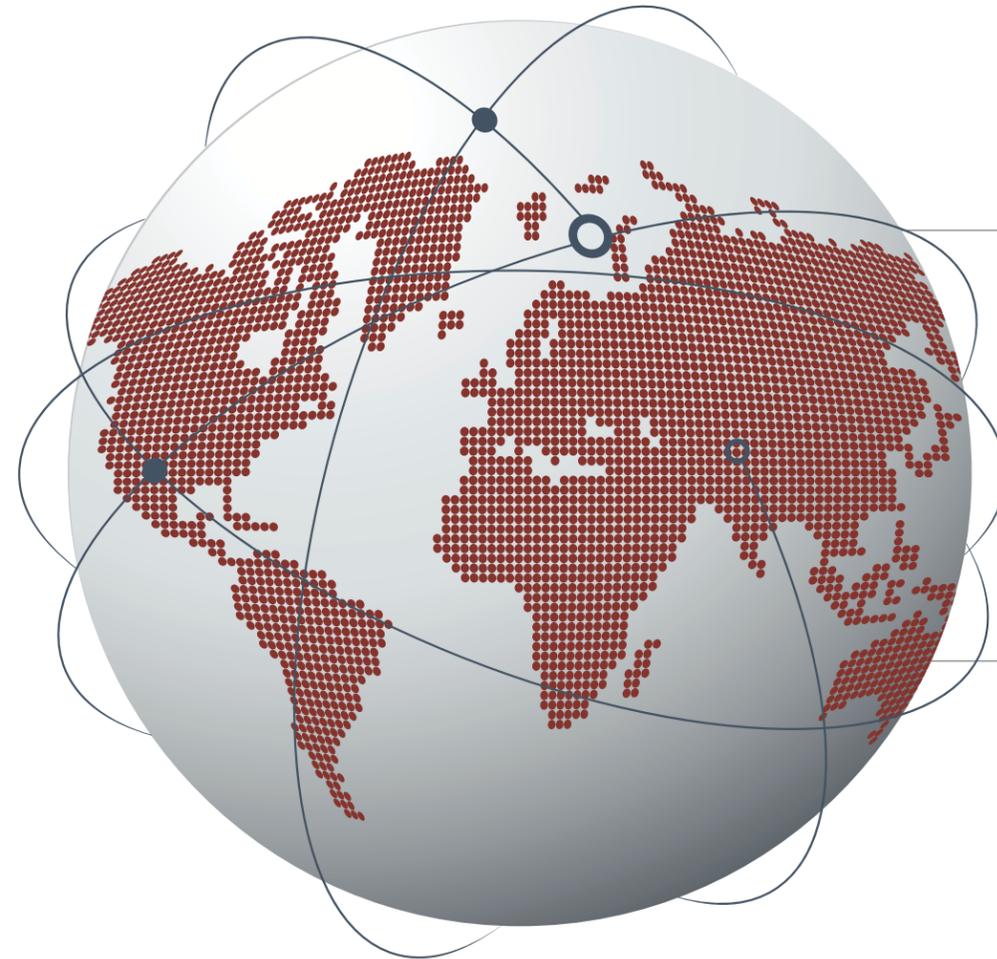
NATIONAL AND INTERNATIONAL OUTREACH EFFORTS AS A MEANS TO EXCHANGE

EDUCATIONAL OUTREACH IS A KEY PRIORITY OF THE EGG INDUSTRY CENTER. DISSEMINATING INFORMATION GLEANED THROUGH RESEARCH AND OTHER CENTER ACTIVITIES ENSURES INDUSTRY STAKEHOLDERS ARE WELL PREPARED TO MAKE INFORMED DECISIONS ABOUT CURRENT AND EMERGING ISSUES. BUT AS MUCH AS IT IS ABOUT SHARING INTELLIGENCE, OUTREACH IS ALSO ABOUT LEARNING NEW FACTS: ABOUT IMPENDING REGULATIONS, EMERGING TRENDS, TECHNICAL DEVELOPMENTS AND HOW OTHER COUNTRIES ARE HANDLING INDUSTRY CHANGES BOUND FOR THE U.S.

“Outreach is normally more about what I learn than what I teach,” says Maro Ibarburu, associate scientist and business analyst at the center, whose outreach efforts this year included presentations at the World Poultry Science Association in Switzerland, Jornadas Profesionales de Avicultura in Spain and the Zinpro Layer Seminar in Las Vegas, among many others. “It’s a good opportunity to learn what others are doing, and I often bring new learning back to our producers.”

Hongwei Xin, director of the center, agrees. “Through outreach, we find out what the issues and problems are facing the industry and then incorporate them into the center’s research,” he says. “It makes the research more meaningful and the center more effective.”

Throughout 2014, Xin and Ibarburu made dozens of trips across the country and the globe as keynote speakers, presenters and advisors. A few stops on Xin’s itinerary included the **International Egg Commission Annual Conference in London**, **WING Symposium in Germany**, **United Egg Producers annual meeting in Ashville, N.C.** and the **Seminar at the Beijing Institute of Animal Science, Chinese Academy of Agricultural Sciences.**



While most would cringe at such an extensive travel schedule, Xin smiles at its mention, saying he is appreciative of the invitations and notes that they are reflective of the growing relevance of the center and its expertise. **Xin’s travels also enable him to learn first-hand how other countries are responding to major issues — such as the European Union’s ban on cage operations — and how the U.S. can better prepare to face similar developments when they inevitably surface closer to home.**

Through its outreach efforts, the center helps facilitate the exchange of information among industry stakeholders that is critical to the industry’s long-term sustainability — in the U.S. and throughout the world.

PROMOTING THE EDUCATION OF FUTURE INDUSTRY LEADERS

EGG INDUSTRY CENTER HELPS SHAPE THE INDUSTRY’S FUTURE THROUGH TEACHING AND SCHOLARSHIPS

AS THE EGG INDUSTRY AND ITS LEGAL LANDSCAPE CONTINUE TO EVOLVE, THERE IS AN INCREASING NEED FOR TALENTED YOUNG PROFESSIONALS WITH SPECIALIZED KNOWLEDGE WHO CAN NOT ONLY HIT THE GROUND RUNNING UPON GRADUATION BUT WHO ALSO CAN LEAD THE INDUSTRY WELL INTO THE FUTURE. THE EGG INDUSTRY CENTER PROMOTES THE DEVELOPMENT OF THESE HIGHLY SKILLED INDIVIDUALS THROUGH INSTRUCTION AND THE PROVISION OF SCHOLARSHIPS.

MIDWEST POULTRY CONSORTIUM

Every summer since 2011, Maro Ibarburu, associate scientist and business analyst at the center, packs up his suitcase and heads to Madison, Wis., to lecture at the Center of Excellence, a poultry science education program facilitated by the Midwest Poultry Consortium.

“It’s important for students to learn about industry economics,” says Ibarburu. “Although most students will specialize in one area when they finish their studies, it’s good for them to understand the bigger picture.”

ANIMALS AND AGRICULTURE PRODUCTION – LAW AND POLICY COURSE

Recognizing the need for sharp legal minds able to decipher the increasingly complex legalities of the egg industry, the center provides agricultural law students with scholarships to enroll in **Animals and Agriculture Production – Law and Policy**, a two-credit course held at the University of Nebraska-Lincoln.

EIC FUNDED AGRICULTURAL LAW SCHOLARSHIP RECIPIENTS

- **SARA BOYUM**
University of South Dakota Law School
- **CLARA CONKLIN**
Boston College Law School
- **TERRA FISHER**
University of South Dakota School of Law
- **MICHAEL FINCHER**
University of Arkansas - Little Rock Bowen School of Law
- **CODY BASSHAM**
University of Arkansas - Little Rock Bowden School of Law

EGG INDUSTRY CENTER ADVISORY BOARD

THE EGG INDUSTRY CENTER ADVISORY BOARD IS COMPRISED OF ACTIVE LEADERS FROM MANY FACETS OF THE EGG INDUSTRY. RESPONSIBLE FOR GUIDANCE AND DECISION-MAKING, MEMBERS OF THE ADVISORY BOARD VOLUNTEER THEIR TIME, TALENT AND EXPERTISE TO ENSURE THE CONTINUED SUCCESS OF THE CENTER AND THE EGG INDUSTRY.

ADVISORY BOARD MEMBERS



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PETE BLOCK



DENNIS CASEY



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BRUCE DOOYEMA



JEFF HENNING



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DAVID RETTING



MARCUS RUST



BETH SCHNELL



BLAIR VAN ZETTEN



WENDY WINTERSTEEN

EX-OFFICIO MEMBERS



ANGELA LAURY-SHAW



RUTH MACDONALD



BILL NORTHEY



KEVIN VINCHATTLE



HONGWEI XIN

ON THE MOVE

Kevin Vinchattle, member of the center's advisory board, is leaving his position as CEO of the Iowa Egg Council and will be moving to Florida with his wife, Sonia. The Egg Industry Center is grateful to Kevin for his many years of dedicated service. THANKYOU, Kevin. We wish you all the best.

"Kevin Vinchattle has been a strong leader for the egg industry in Iowa and a tireless advocate for research, extension and teaching programs in support of the industry. Thanks to Kevin's leadership, the Egg Industry Center was established at Iowa State University in 2008. As a member of the center's advisory board, Kevin has helped to focus the center's work on significant issues nationally and in partnership with faculty and industry representatives across the nation. Kevin made the Egg Industry Center his top priority – he always was thinking strategically about how the center could achieve greater successes on behalf of the industry."

– Wendy Wintersteen, member, Egg Industry Center Advisory Board and Endowed Dean, College of Agriculture and Life Sciences, Iowa State University

STRONGER

THE EGG INDUSTRY CENTER IS STRONGER THAN EVER Sparking national media coverage for its landmark, environmental footprint study and achieving record attendance at its annual issues forum in 2014, the center is excited to build on the momentum gained this year. Thanks to the commitment of our visionary donors, the center is confident in its ability to extend its reach and further its impact on the egg industry in the coming years. To learn how you can play a key role in the future of the center and its impact on the egg industry, contact us today!

— THAN EVER

EIC IMPACT REPORT

EGG INDUSTRY CENTER ENDOWMENT FUNDS ARE MANAGED BY THE IOWA STATE UNIVERSITY FOUNDATION. FOR MORE INFORMATION GO TO www.foundation.iastate.edu OR CALL 866.419.6768.



The Egg Industry Center is administered, and this impact report provided, by the College of Agriculture and Life Sciences at Iowa State University. Iowa State University does not discriminate on the basis of race, color, age, ethnicity, religion, national origin, pregnancy, sexual orientation, gender identity, genetic information, sex, marital status, disability, or status as a U.S. veteran. Inquiries regarding non-discrimination policies may be directed to Robinette Kelley, Director, Office of Equal Opportunity, Title IX/ADA Coordinator, and Affirmative Action Officer, 3350 Beardshear Hall, Ames, Iowa 50011, Tel. 515 294-7612, email eooffice@iastate.edu.