

# **TRENDS IN POULTRY SUSTAINABILITY AND WELFARE**

**KEN OPENGART, DVM, PhD, DACPV  
TYSON FOODS**

## **AGENDA**

**SUSTAINABILITY FUNDAMENTALS**

**TRENDS IN POULTRY SUSTAINABILITY**

**TRENDS IN POULTRY WELFARE**

## AGENDA

SUSTAINABILITY FUNDAMENTALS

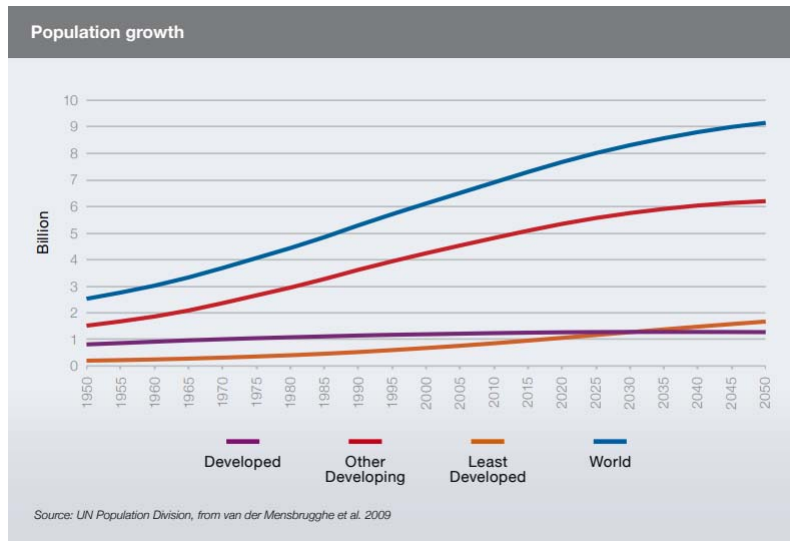
TRENDS IN POULTRY SUSTAINABILITY

TRENDS IN POULTRY WELFARE

TODAY, 7.3 BILLION PEOPLE CONSUME  
1.5 TIMES WHAT THE EARTH'S NATURAL  
RESOURCES CAN SUPPLY.

BY 2050, THE WORLD'S POPULATION  
WILL REACH 9 BILLION AND THE  
DEMAND FOR FOOD WILL DOUBLE.





**MOST OF THE POPULATION GROWTH WILL OCCUR IN DEVELOPING NATIONS. AS THE MIDDLE CLASS GROWS IN THESE COUNTRIES, PROJECTED DEMAND FOR DIETARY ANIMAL PROTEIN WILL CONTINUE TO GROW.**

**Sustainable Development Goals**

- 1 NO POVERTY
- 2 ZERO HUNGER
- 3 GOOD HEALTH AND WELL-BEING
- 4 QUALITY EDUCATION
- 5 GENDER EQUALITY
- 6 CLEAN WATER AND SANITATION
- 7 AFFORDABLE AND CLEAN ENERGY
- 8 DECENT WORK AND ECONOMIC GROWTH
- 9 INDUSTRY, INNOVATION AND INFRASTRUCTURE
- 10 REDUCED INEQUALITIES
- 11 SUSTAINABLE CITIES AND COMMUNITIES
- 12 RESPONSIBLE CONSUMPTION AND PRODUCTION
- 13 CLIMATE ACTION
- 14 LIFE BELOW WATER
- 15 LIFE ON LAND
- 16 PEACE, JUSTICE AND STRONG INSTITUTIONS
- 17 PARTNERSHIPS FOR THE GOALS

**FOOD SECURITY**  
Adequate access to food in both quality and quantity

**MODERATE FOOD INSECURITY**  
People experiencing moderate food insecurity face uncertainties about their ability to obtain food, and have been forced to compromise on the quality and/or quantity of the food they consume

**SEVERE FOOD INSECURITY**  
People experiencing severe food insecurity have typically run out of food and, at worst, gone a day (or days) without eating

**SDG INDICATOR 2.1.2**  
The prevalence of moderate or severe food insecurity in the population based on the FIES

SOURCE: FAO.

“SUSTAINABLE DEVELOPMENT  
*is that which*  
**MEETS THE NEEDS**  
*of the -----> PRESENT*  
**WITHOUT COMPROMISING**  
*the ability of*  
*future generations to*  
**MEET THEIR OWN**  
**NEEDS”**

The definition of sustainable development comes from the  
Hansen Foundation, Prime Minister  
of Norway and author of Our  
Common Future (1987)

Sustainability  
is the balance  
between the  
Environment,  
the Economy,  
and Ethics.

**E**  
Environment

- Environmental Policy
- Establishment of a Low-carbon Society
- Establishment of a Recycling-oriented Society
- Establishment of a Society in which People Coexist with Nature
- Fundamental Activities: Environmental Management

**S**  
Society

- Human Rights
- Labor Practices
- Human Resources Development
- Harnessing a Diverse Range of Human Resources
- Employee Safety and Health
- Quality First
- Co-existence and Co-prosperity with Suppliers
- Social Contribution Activities

**G**  
Governance

- CSR Management
- Corporate Governance
- Compliance
- Risk Management
- Information Protection and Management
- Intellectual Property Activities
- Relationship with Stakeholders

## SUSTAINABILITY MESSAGES THAT RESONATE WITH STAKEHOLDERS

- HOLISTIC IN NATURE
- MITIGATE RISK
- CAPTURE OPPORTUNITY
- DRIVE CONTINUOUS IMPROVEMENT
- DELIVER SUSTAINABLE BUSINESS OUTCOMES



**FOOD**  
*Deliver highest levels of food safety*



**ANIMAL WELFARE**  
*Lead in animal welfare through compassionate care and sound science*



**ENVIRONMENT**  
*Reduce environmental impact as we feed the world*



**WORKPLACE**  
*Enable our team members to reach their unique potential*



**COMMUNITY**  
*Support the communities we serve where help is needed most*

## AGENDA

SUSTAINABILITY FUNDAMENTALS

TRENDS IN POULTRY SUSTAINABILITY

TRENDS IN POULTRY WELFARE

WHAT IS SUSTAINABLE POULTRY?

HOW DO WE DEFINE SUSTAINABLE POULTRY?

HOW IS SUSTAINABLE POULTRY PRODUCED?



# **POULTRY SUSTAINABILITY**

## **INITIAL PERSPECTIVE FOR INTERNAL STAKEHOLDERS**

**NOTHING NEW –  
DOING THE SAME THINGS, CALLING IT SOMETHING DIFFERENT**

**A NEW FRAMEWORK OR PLATFORM**

# **POULTRY SUSTAINABILITY**

## **EVOLVING PERSPECTIVE FOR ALL STAKEHOLDERS**



**INTERNAL AND EXTERNAL STAKEHOLDERS**

**INTEREST IN BROADER TOPICS**

**OPPORTUNITY TO TELL A GREAT STORY**

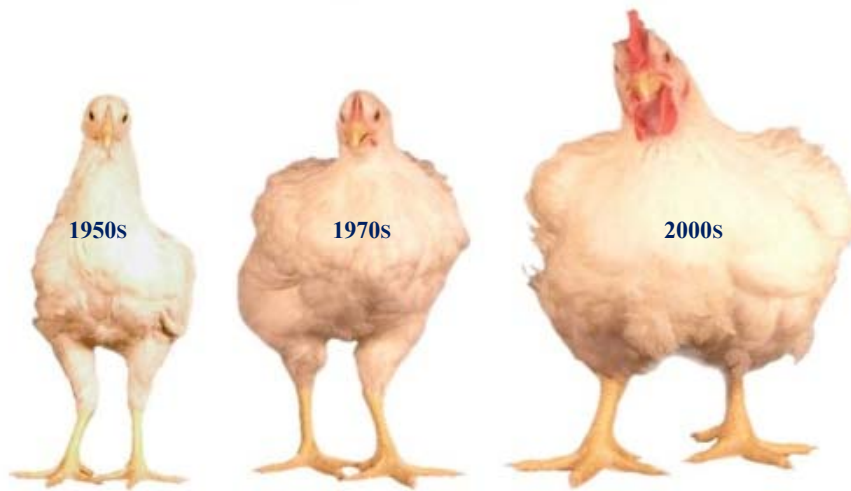
# POULTRY SUSTAINABILITY

## KEY ISSUES FOR STAKEHOLDERS

- ECONOMICS,  
ENVIRONMENT** • EFFICIENCY OF PRODUCTION
  - OPTIMIZED USE OF RESOURCES
  - ENVIRONMENTAL IMPACT – LAND USE/GHG/WATER/WASTE
- SOCIAL** • ANIMAL WELFARE
  - ANTIBIOTIC USE

## POULTRY INDUSTRY TRENDS

## HISTORICAL BROILER PERFORMANCE COMPARISON



ZUIDHOF ET AL. POULTRY SCIENCE, 2014

## FACTORS CONTRIBUTING TO IMPROVED BROILER SUSTAINABILITY



**IMPROVED  
GENETICS**



**IMPROVED  
NUTRITION**



**IMPROVED  
MANAGEMENT**



**NO HORMONES,  
RESPONSIBLE  
ANTIBIOTIC USE**



**IMPROVED  
INFRASTRUCTURE**



## FACTORS CONTRIBUTING TO IMPROVED BROILER SUSTAINABILITY



**NO HORMONES,  
RESPONSIBLE  
ANTIBIOTIC USE**

### U.S. FOOD AND DRUG ADMINISTRATION

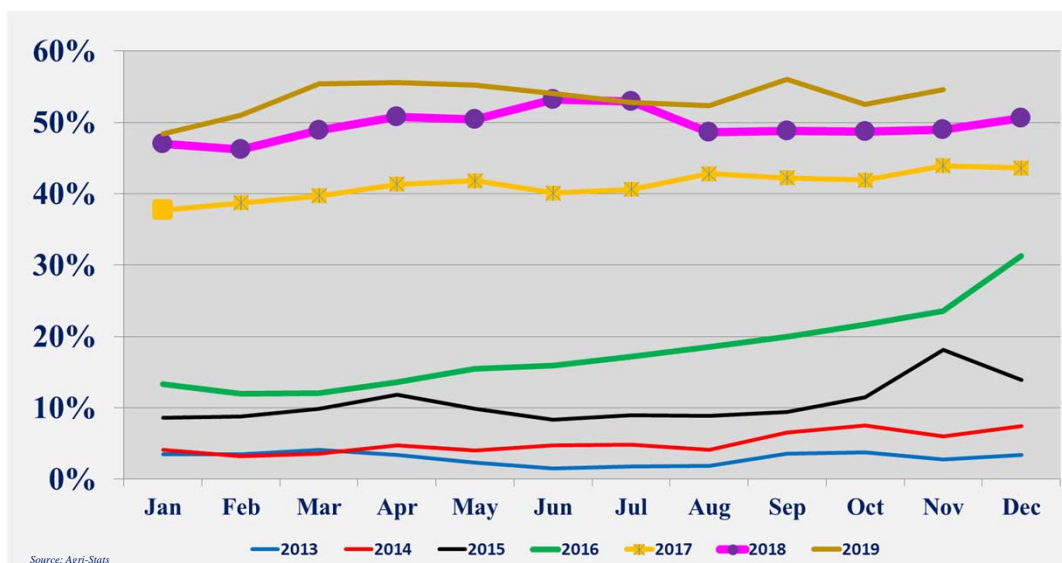
- 1950s - HORMONES ILLEGAL TO ADMINISTER TO POULTRY
- 2016 - REMOVAL OF ANTIBIOTIC GROWTH PROMOTING CLAIMS

### INDUSTRY

- MORE RESPONSIBLE USE OF ANTIBIOTICS (NAIHM, NAE)
  - NO HATCHERY
  - NO PROPHYLAXIS
  - THERAPY AND METAPHYLAXIS

## PERCENT OF U.S. BROILERS RAISED AS 'NO ANTIBIOTICS EVER'

JANUARY 2013 THROUGH NOVEMBER 2019



## FACTORS CONTRIBUTING TO IMPROVED BROILER SUSTAINABILITY

### TARGETED GENETIC SELECTION

#### - PERFORMANCE TRAITS

- RATE OF GAIN
- FEED CONVERSION
- BREAST YIELD

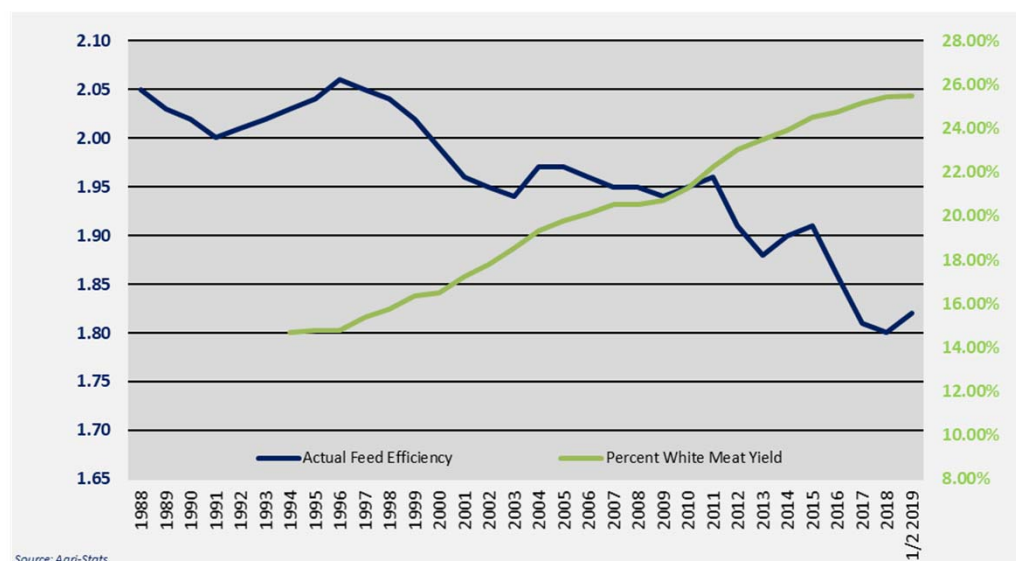
#### - HEALTH TRAITS

- IMMUNE FUNCTION
- SPECIFIC DISEASE RESISTANCE
- CARDIOVASCULAR STRENGTH
- LEG STRENGTH

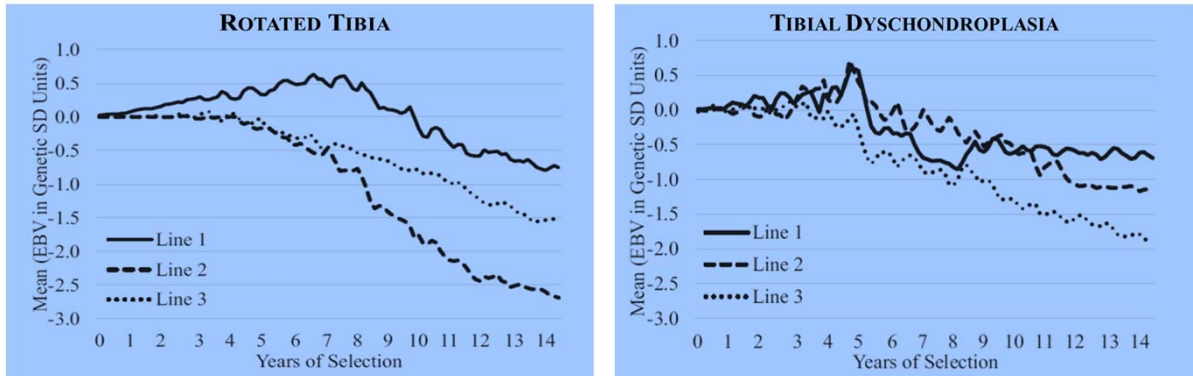


## IMPROVED GENETICS

## U.S. BROILER INDUSTRY TRENDS FEED EFFICIENCY AND WHITE MEAT YIELD



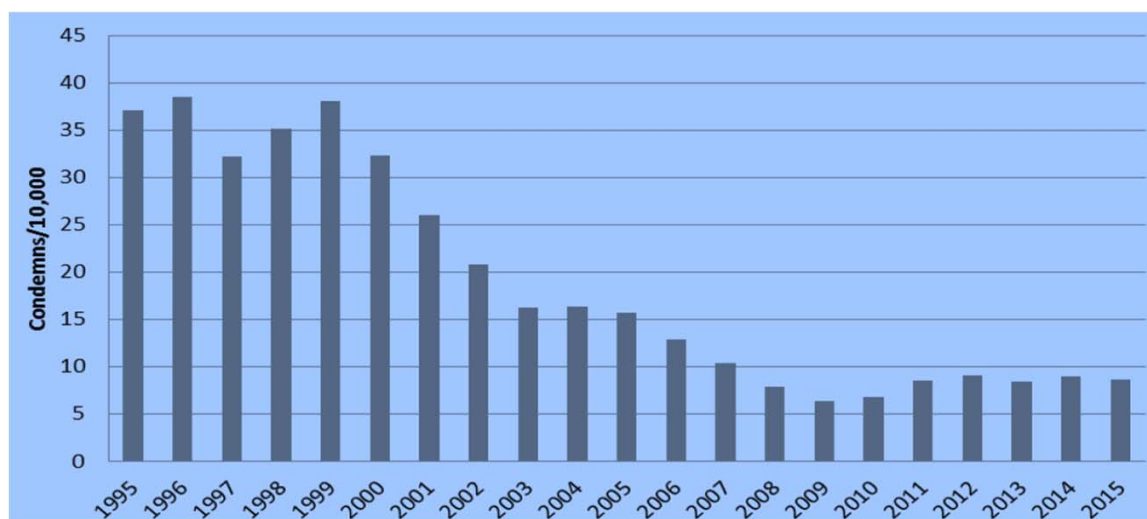
## LEG DEFECT TRENDS



GENETIC TRENDS OF 3 CHICKEN PURE LINES, EXPRESSED AS A DEVIATION FROM EXPECTED BREEDING VALUES (EBV), OVER 14 YEAR OF SELECTION TO IMPROVE TIBIA HEALTH.

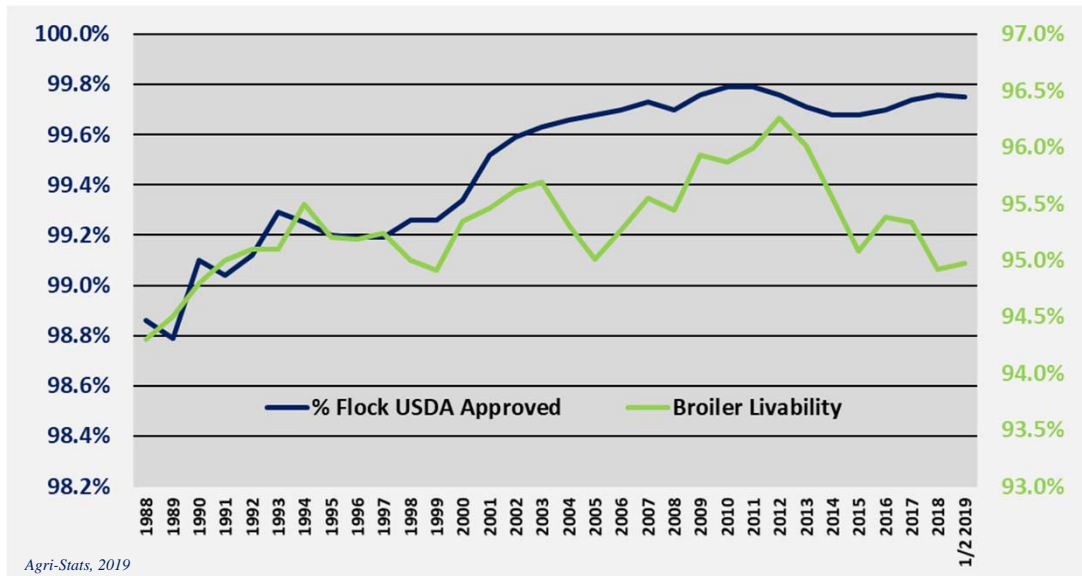
*Siegel et al., JAPR, 2019*

## CONDEMNATION RATES DUE TO ASCITES/OEDEMA



*Canadian Food Inspection Agency, Aviagen, July 2016*

## U.S. BROILER INDUSTRY TRENDS BROILER LIVABILITY AND FLOCK HEALTH



## FACTORS CONTRIBUTING TO IMPROVED BROILER SUSTAINABILITY

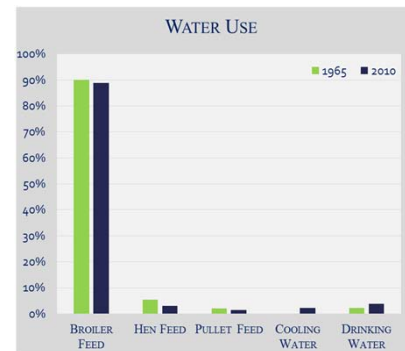
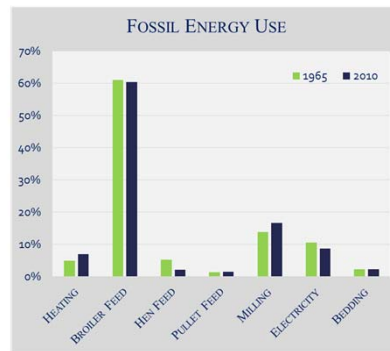
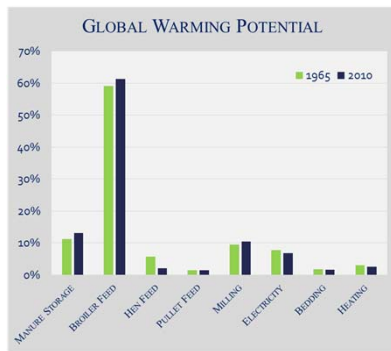


### IMPROVED NUTRITION

- ON-GOING RESEARCH
- TECHNICALLY-SKILLED NUTRITIONISTS
- HIGHER AND MORE CONSISTENT QUALITY INGREDIENTS
- BETTER UNDERSTANDING OF HOW TO USE ALTERNATIVE INGREDIENTS

## WHY IS NUTRITION AND FEEDING SO IMPORTANT?

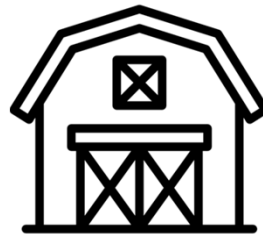
- FEED (GROWING OF FEEDSTUFFS, TRANSPORTATION, PROCESSING, MILLING, DELIVERY) ACCOUNTS FOR >60% OF THE ENVIRONMENTAL IMPACT
- THEREFORE, THE MORE EFFICIENT WE CAN UTILIZE FEED THE GREATER THE IMPACT WE CAN HAVE ON SUSTAINABILITY (ECONOMIC, ENVIRONMENT)
- GROWING INTEREST IN DEFORESTATION AND LAND STEWARDSHIP RELATIVE TO FEED GRAINS USED IN POULTRY FEED



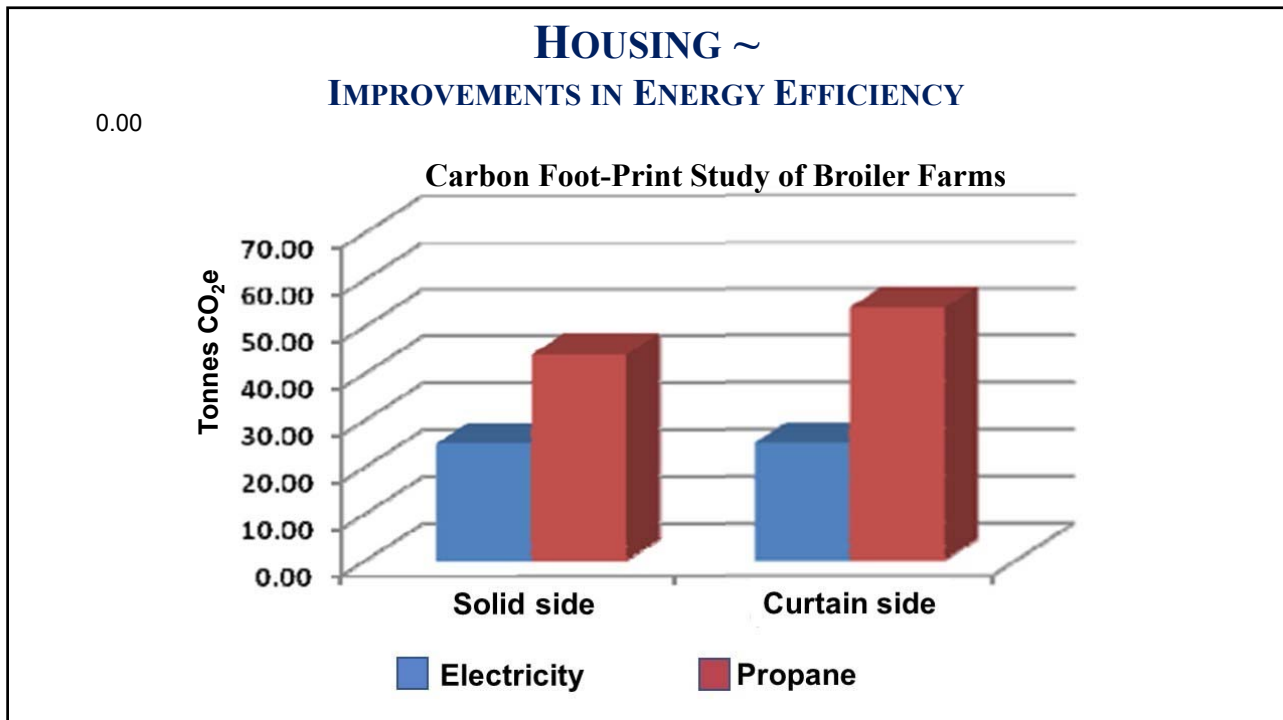
THOMA, MATLOCK AND PUTNAM, 2016

## FACTORS CONTRIBUTING TO IMPROVED BROILER SUSTAINABILITY

- CLOSED DRINKING SYSTEMS
  - INTRODUCTION OF NIPPLE DRINKERS
- ENVIRONMENTAL CONTROL
  - TUNNEL VENTILATION
  - GREATER WIND SPEED
  - EVAPORATIVE COOLING
  - COMPUTERIZED CONTROL
- ENERGY EFFICIENCY
  - BETTER CONSTRUCTED HOUSES
  - SOLID SIDE-WALLED HOUSES
  - MORE EFFICIENT FANS
  - MORE EFFICIENT HEATERS



**IMPROVED  
INFRASTRUCTURE**



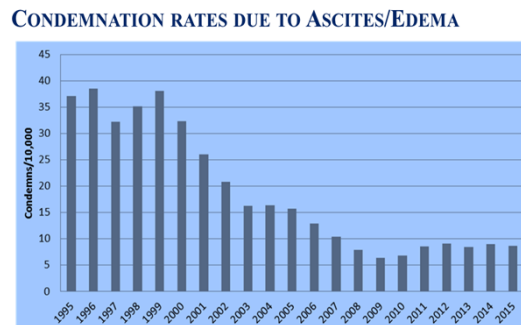
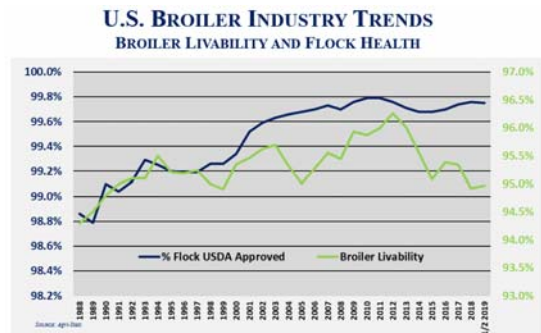
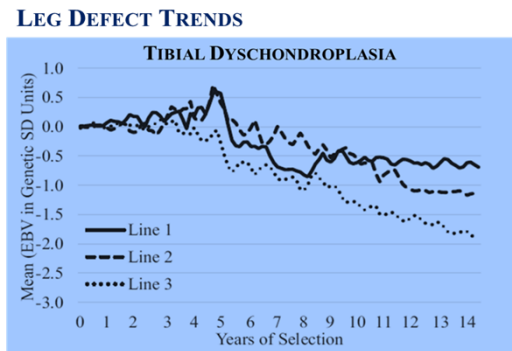
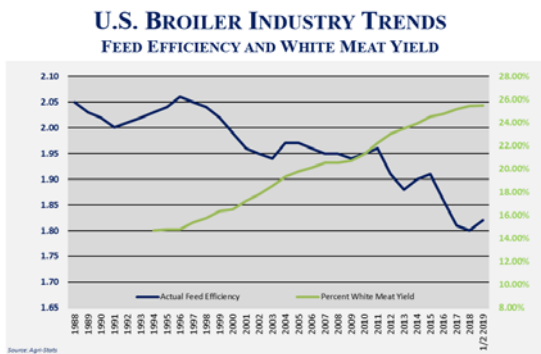
**HOUSING ~  
IMPROVEMENTS IN ENERGY EFFICIENCY**

	2011	2013	2015	2017	2019
<b>PERCENT SOLID SIDE-WALL</b>	<b>38%</b>	<b>46%</b>	<b>65%</b>	<b>80%</b>	<b>92%</b>

- WE HAVE BEEN ABLE TO USE THE INFORMATION FROM THE STUDY DONE WITH UNIVERSITY OF GEORGIA ALONG WITH ECONOMIC INCENTIVES TO DRIVE TOWARD A MORE ENERGY EFFICIENT BROILER HOUSE DESIGN.
- AVERAGE ANNUAL PROPANE SAVINGS IN A SOLID SIDE-WALLED HOUSE VS. CURTAIN-SIDED HOUSE: 30 - 40%.
- SINCE 2015, ALL NEW BROILER HOUSE CONSTRUCTION WAS SOLID SIDE-WALL.

## FACTORS CONTRIBUTING TO IMPROVED BROILER SUSTAINABILITY

- MANAGEMENT PROGRAMS
- ANIMAL HEALTH AND WELFARE PROGRAMS
- BIOSECURITY PROGRAMS
- PRE-HARVEST FOOD SAFETY PROGRAMS



## PROGRESS OF U.S. BROILER PRODUCERS OVER 45 YEARS:



WATER DEPLETION:  
**53% REDUCTION**



LAND OCCUPATION:  
**71% REDUCTION**



FOSSIL ENERGY:  
**38% REDUCTION**



GLOBAL WARMING POTENTIAL:  
**32% REDUCTION**

\* BASED ON 1 KG LIVE WEIGHT

THOMA, MATLOCK AND PUTNAM, 2016

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TRENDS IN POULTRY WELFARE



## **PRESSURE TO IMPLEMENT RESOURCE-BASED SPECIFICATIONS**

### **RESOURCE-BASED**

DESCRIPTIVE PARAMETERS BASED ON INPUTS OR PROVISIONS IN THE BIRD'S ENVIRONMENT

- MAXIMUM NUMBER OF KGS OF BROILER ALLOWED PER SQUARE METER OF FLOOR SPACE
- BREED
- GROWTH RATE
- LIGHT INTENSITY OR LIGHT SOURCE
- DIETARY REQUIREMENTS

## **IMPACT OF TRANSITION TO RESOURCE-BASED SPECIFICATIONS**

### **INCREASED USE OF RESOURCES**

- ENVIRONMENTAL IMPACT – GREATER IMPACT ON CLIMATE
- ECONOMIC IMPACT – REDUCED EFFICIENCY OF PRODUCTION
- UNCLEAR BENEFIT TO WELFARE

## POTENTIAL IMPACT OF SLOW GROWING GENETICS ON PRODUCTION AND ENVIRONMENTAL METRICS

DAYS TO TARGET WEIGHT	FEED CONVERSION	WHITE MEAT YIELD	WHITE MEAT YIELD PER ACRE	WATER PER KG LIVE WEIGHT	MANURE PER KG WHITE MEAT	GHG EMISSIONS (CO <sub>2</sub> EQ)
↑12	↑27%	↓37%	↓57%	↑27%	↑76%	↑39%

## HOW DO WE DEMONSTRATE PROGRESS IN WELFARE?

### OUTCOME-BASED/ANIMAL-BASED/EVIDENCE-BASED/SCIENCE-BASED

OBJECTIVE MEASUREMENTS WHICH QUANTIFY THE IMPACT OF THE BIRDS' ENVIRONMENT AND THE MANAGEMENT OF THE POULTRY HOUSE ON THE BIRD

- MORBIDITY
- MORTALITY
- BODY CONDITION
- INJURY RATE
- DISEASE RATE
- FOOT PAD SCORES
- GAIT SCORES

## **OPPORTUNITY**

### **UTILIZE INPUTS**

- ANIMAL-BASED CRITERIA
- RESOURCE-BASED REQUIREMENTS

### **MEASURE OUTPUTS**

- IMPROVED WELFARE OUTCOMES
- IMPROVED ENVIRONMENTAL OUTCOMES
- IMPROVED EFFICIENCY OF RESOURCE USE
- ECONOMICALLY VIABLE

### **DELIVER**

- BALANCED, HOLISTIC APPROACH
- PRODUCES SUSTAINABLE OUTCOMES

## **HOLISTIC APPROACH TO WELFARE RESEARCH**

- CONSIDER RESOURCES USED WITHIN OUR SYSTEM.
- FOCUSING ON “OUTCOMES” INSTEAD OF “INPUTS”.
- IDEALLY, DEMONSTRATE IMPROVED WELFARE OUTCOMES WHILE BEST MANAGING COST OF RESOURCE-RELATED REQUIREMENTS AND OVERALL IMPACT TO THE ENVIRONMENT.

## FUNDAMENTAL APPROACH TO RESEARCH

- **ALLOW FOR THE EXPRESSION OF PREFERENCE, THROUGH APPLIED RESEARCH, WHEN GIVEN CHOICE IN DIFFERENT SITUATIONS.**
- **USE A SCIENCE-BASED APPROACH TO EVALUATE THE IMPACT OF THE DIFFERENT CHOICES ON MEASURABLE OUTCOMES.**
- **USE A SCIENCE-BASED APPROACH TO DEFINE/REFINE STANDARDS TO DRIVE CONTINUOUS IMPROVEMENT IN OUTCOME-BASED MEASURES OF WELFARE.**
- **TRANSPARENTLY SHARE THE RESULTS OF OUR PROGRESS WITH OUR STAKEHOLDERS.**

## ENRICHMENT PREFERENCE TRIALS

- **ALLOWING BROILERS TO CHOOSE THE ENRICHMENTS THAT THEY WILL ENGAGE WITH FOR THE LENGTH OF THE FLOCK.**
- **CONSIDERATION FOR RECYCLED MATERIAL, SAFE FOR BIRDS AND GROWERS, BIOSECURE AND EASY TO STORE AND DEPLOY.**





## CHOICE LIGHTING TRIALS

- ONGOING RESEARCH TO DETERMINE BEST LIGHTING PROGRAM FOR WELFARE.
- BIRDS PREFER CHOICE IN LIGHT INTENSITY TO DISPLAY NATURAL BEHAVIORS
- RESEARCH CONFIRMS BETTER WELFARE
- RESEARCH CONFIRMS BETTER PERFORMANCE

Weekly Financial and Environmental Impact of Lighting Program per 1,000,000 Bird Complex

	FCR Impact	\$ Impact	Acre Impact*	GHG Impact (CO <sub>2</sub> eq)
Choice Lighting	-	-	-	-
Conventional Lighting	+3	+20.4K	+30	+
Bright Lighting (20 lux)	+7	+47.7K	+71.5	+

HOW DOES THE ASSOCIATED IMPROVEMENT IN FCR CONTRIBUTE TO TYSON'S STATED GOAL TO REDUCE GHG BY 30% BY 2030?

A GREAT STORY TO TELL.....

BUT WE HAVE TO TELL IT THE RIGHT WAY.

## FOUR ESSENTIAL KEYS TO MESSAGING SUSTAINABILITY

### 1. IT'S NOT JUST BUSINESS, IT'S PERSONAL



MELANIE JANIN, BUSINESS FOR SOCIAL RESPONSIBILITY, 2016

## FOUR ESSENTIAL KEYS TO MESSAGING SUSTAINABILITY

### 2. GOOD SUSTAINABILITY STORIES STAND THE TEST OF TIME



MELANIE JANIN, BUSINESS FOR SOCIAL RESPONSIBILITY, 2016

## FOUR ESSENTIAL KEYS TO MESSAGING SUSTAINABILITY

### 3. SUSTAINABLE BUSINESSES INCLUDE MIND, BODY AND SPIRIT



Mind Full, or Mindful?

- HOW PRODUCTS AND SERVICES IMPROVE HEALTH AND WELFARE
- WHAT WE ACCOMPLISH AS AN INDUSTRY HAS A GREATER PURPOSE

MELANIE JANIN, BUSINESS FOR SOCIAL RESPONSIBILITY, 2016

## FOUR ESSENTIAL KEYS TO MESSAGING SUSTAINABILITY

### 4. THERE IS POWER IN UNITY AND COLLABORATION



MELANIE JANIN, BUSINESS FOR SOCIAL RESPONSIBILITY, 2016

## THE DRIVE TOWARD CONSCIOUS CAPITALISM

ENVIRONMENT, SOCIAL GOVERNANCE/ECONOMICS

### THE 4 TENETS OF CONSCIOUS CAPITALISM:

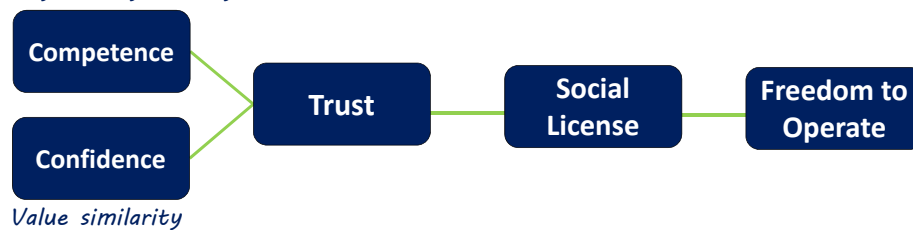
- **HIGHER PURPOSE:** BUSINESSES SHOULD EXIST FOR REASONS BEYOND MAKING A PROFIT.
- **STAKEHOLDER ORIENTATION:** CONSCIOUS BUSINESSES VALUE AND CARE FOR ALL STAKEHOLDERS INVOLVED, INCLUDING CUSTOMERS, EMPLOYEES, INVESTORS, COMMUNITIES, SUPPLIERS AND THE ENVIRONMENT.
- **CONSCIOUS LEADERSHIP:** FOCUS ON “WE,” RATHER THAN “ME.”
- **CONSCIOUS CULTURE:** THE CULTURE OF A BUSINESS IS ITS HEARTBEAT. WITHOUT A HEALTHY ONE, BUSINESSES ULTIMATELY FAIL.

<https://www.consciouscapitalism.org/>

## DESIRED OUTCOMES

- BRAND TRUST
- CONSUMER CONFIDENCE
- ENHANCED SOCIAL LICENSE

*Doing the right thing*



Center for Food Integrity



**THANK YOU**