Poultry Breeding for sustainable increase in production

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The question

“How can animal breeding contribute to sustainable and global animal production”

August 29, 2018 - 8:30-12:30
## World Population; Growing

<table>
<thead>
<tr>
<th>Year</th>
<th>Africa</th>
<th>Asia</th>
<th>Europe</th>
<th>North America</th>
<th>World</th>
<th>% Africa</th>
</tr>
</thead>
<tbody>
<tr>
<td>1950</td>
<td>0.229</td>
<td>1.396</td>
<td>0.549</td>
<td>0.172</td>
<td>2.526</td>
<td>9.1</td>
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<tr>
<td>1980</td>
<td>0.478</td>
<td>2.634</td>
<td>0.695</td>
<td>0.255</td>
<td>4.449</td>
<td>10.7</td>
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<tr>
<td>2013</td>
<td>1.111</td>
<td>4.299</td>
<td>0.742</td>
<td>0.355</td>
<td>7.162</td>
<td>15.5</td>
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<tr>
<td>2015</td>
<td>1.186</td>
<td>4.393</td>
<td>0.738</td>
<td>0.358</td>
<td>7.349</td>
<td>16.1</td>
</tr>
<tr>
<td>2017</td>
<td>1.256</td>
<td>4.504</td>
<td>0.742</td>
<td>0.361</td>
<td>7.550</td>
<td>16.6</td>
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<tr>
<td>2030</td>
<td>1.700</td>
<td>4.947</td>
<td>0.739</td>
<td>0.395</td>
<td>8.551</td>
<td>19.9</td>
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<tr>
<td>2050</td>
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<td>5.257</td>
<td>0.716</td>
<td>0.435</td>
<td>9.772</td>
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<tr>
<td>2100</td>
<td>4.470</td>
<td>4.780</td>
<td>0.653</td>
<td>0.499</td>
<td>11.184</td>
<td>40.0</td>
</tr>
</tbody>
</table>
% of world population in Africa and Asia

- 78% in 2030
- 80% in 2050
- 83% in 2100
% Increase in meat production 2015/17 to 2027

Developed (24%)

Developing (76%)

Beef
Pork
Poultry
Sheep

In regions significantly affected by conflict, wars and a host of other man-made and natural disasters, food production systems need to be resilient and sustainable (OECD-FAO, 2018)

▲ 48.14M Tonnes
Poultry 44%
OECD/FAO 2018
Poultry production needs to increase sustainably, more so in Africa and Asia.

**Sustainability**

- Use production resources efficiently without compromising future availability.
- Avoid non reversible impact on the environment to guarantee support for life as we know it in future generations.
Sustainable increase: Key elements

Genetically superior stock; Efficient, robust & resilient

Efficient production systems (entire value chain)

Knowledgeable and skilled managers (Human capacity)
Breeding of genetically superior stock

Sustainable breeding: Via balanced breeding goals targeted at traits linked to sustainability and environmental protection.

Balance economic success with impact on environment, human health and animal welfare
Balanced Genetic Improvement

**BREEDER**
- Chick output
- Hatchability
- Liveability
- Fertility Egg
- Quality

**LIVE BROILER**
- Growth
- FCR
- Liveability
- Uniformity

**PROCESSING**
- Yield Components
  - Eviscerated
  - Breast, Leg
  - Uniformity
  - Meat Quality

**SUPPORT**
- Metabolic Fitness
- Welfare Traits
- Liveability
- Skeletal Strength
- Disease Resistance
- Pathogen Freedom
- Chick output
- Hatchability
- Liveability
- Fertility Egg
- Quality
- Growth
- FCR
- Liveability
- Uniformity
- Yield Components
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  - Breast, Leg
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  - Meat Quality
- Metabolic Fitness
- Welfare Traits
- Liveability
- Skeletal Strength
- Disease Resistance
- Pathogen Freedom
Key features

- Wide genetic base
- Broad breeding goal
- Multi-environment selection
# Supporting Efficient Production

<table>
<thead>
<tr>
<th>Genetic Enhancement</th>
<th>Sustainable Supply</th>
<th>Sustainable Production</th>
</tr>
</thead>
</table>
| • ▲ Production efficiency  
  • Chick output, growth, meat yield  
  • Feed efficiency, water utilisation  
  • ▲ Health & welfare | • Seed stock distribution network  
  • Range of products  
  • ▼ Environmental impact  
  • Manage genetic resources | • Research & training support  
  • ▲ Knowledge and human capacity  
  • ▲ Efficient management of high genetic stock  
  • ▼ Environmental impact  
  • Robust performance  
  • Technical support |
Efficient Distribution network
Supporting Poultry sector’s contribution to attaining the UN 2030 Sustainable Development Goals (SDGs)
Human capacity building

• Direct technical support
• Technical management information resources
• Train the trainers
• Develop new talents

Skilled farmers manage resources better, minimises waste & gets the best out of high genetic merit birds
Aviagen Schools

- Aviagen provides a central venue, teachers and all materials required for a hands-on training.

- Students from various countries nominated by clients/farmers so we know they will practice what they learn.

**Education Events**

**EMEA SCHOOL: BREEDER MODULE**
26/08/2018 - 01/09/2018
Edinburgh, Scotland, UK
The breeder module focuses on identifying how to improve the cost efficient production of fertile hatching eggs in an interactive workshop format.

**EMEA SCHOOL: BROILER MODULE**
25/11/2018 - 01/12/2018
Edinburgh, Scotland, UK
The broiler module is a source of information and knowledge on how to improve the production of cost efficient broiler meat in an interactive workshop format.

**U.S. PRODUCTION MANAGEMENT SCHOOL**
03/06/2019 - 28/06/2019
Huntsville, AL
The Aviagen Production Management Course emphasizes many important aspects of poultry science and their practical application to managing successful breeder and broiler operations.
What the students say...

“Information was delivered in an original and progressive manner. The networking opportunity with other students made for interesting discussions and offered new perspectives to take back to my job.”

“IT was a great week overall, with some hugely valuable exercise and insights. It was great to have the opportunity to interact.”

“The take-home messages were clear on many fronts and will empower me in my work.”

To find out more...

If you would like further information about the School, dates and venues please visit www.aviagen.com, contact your local Aviagen representative or school@aviagen.com.

“Knowledge has no value unless you use and share it”
About...

Aviagen have a long history of providing education to the poultry industry, with the original month-long Production Management School taking place in the US for over 80 years.

To meet the growing demand for more formal training opportunities in the poultry industry and in line with our ‘global reach, local touch’ philosophy, we established regional Schools and the Europe, Middle East & Africa (EMEA) Production Management School was founded in 2012.

The EMEA School is unique in that it follows a modular format with three separate week-long courses on the key elements of our business – breeder, broiler and hatchery & incubation management.

All modules have one thing in common: They focus on identifying how to improve the production of cost-efficient broiler meat.

The School is structured to encompass a mix of lectures, tutorials and workshops, all led by Aviagen and external experts who are leaders in their field of expertise. The Breeder and Broiler Modules are both run in the format of an interactive, highly participative case study of a hypothetical company which the students are in charge of.

Everything the students learn during one of the modules will be directly applicable in their day jobs.

Knowledge-sharing between attendees is another important aspect of the School experience. Students learn from each other; the Schools provide an excellent networking platform and many new contacts and friendships are forged, with links made during an Aviagen School continuing long after it finishes.

Fast Facts...

- Over 30 countries represented to date
- Over 400 students

3 Modules

Breeder: Optimising Performance and Economic Returns

Broiler: Optimising Broiler Performance and Economic Returns

Hatchery & Incubation Management: Optimising Hatchery Performance

The Breeder Module:
- Data handling and analysis
- Ventilation
- Veterinary health
- Nutrition
- Critical age management
- Financial benchmarking
- Business case presentation

The Broiler Module:
- Data handling and analysis
- Ventilation
- Veterinary health
- Nutrition
- Critical age management
- Financial benchmarking
- Business case presentation

The Hatchery Module:
- The science of incubation
- Principles of incubation
- Workshops/prooem-solving exercises
- Health and hygiene management
- Care of the hatching egg
- Building design and environmental control
- Data handling and analysis

Fantastic networking opportunity for students and their industry peers

The School thrives on student feedback and is consistently evolving
New models

- Remote coaching
- Seminar and quick-scans
- Vocational training
- Supporting hands on arm of existing institutions and colleges
- Technical assistance accompanying investments
- Strengthening the value chain
Africa Poultry Vocational Training Initiative (APVTI)

• Why
  – Global Outlook ➤
  – Africa: half agricultural land/person in 2050
  – Required: Poultry production both commercially as well as household, read e.g. https://research.rabobank.com/far/en/sectors/animal-protein/Time-for-Africa-Report.html

• Bottle necks
  – Vocational practical poultry training
  – Suitable to get access to funding

• Benefits APVTI
  – ↓ youth unemployment, ↓ rural-urban migration, ↓ rural poverty, ↑ skilled staff
Welcome to the Aviagen Information Library

This library contains material developed by Aviagen to help our customers profitably manage their operations to produce high-performance chickens through sound flock management programs.

To search the Information Library, use the search module. To narrow your search results, use the keyword search and drop-down menus on the module.

All documents are available in English; however, not all documents are available in all languages.
INTRODUCTION

The How To’s are designed to be simple, back to basics documents describing critical management areas, their importance and how to achieve them. The Vet How To’s provide step by step guidance on key veterinary management practices and techniques that will aid and promote overall flock health and welfare.

HOW TO...

1. Take Bacteriological Culture Samples
2. Take FTA Card Samples
3. Take Tissue Samples for Histopathology
INTRODUCTION

The How To's are designed to be simple, back to basics documents describing critical management areas, their importance and how to achieve them. The Broiler Management How To's cover management practices for broilers. Getting basic procedures correct will help maximize flock welfare throughout the life of the flock.

HOW TO...
1. Calibrate an In-House Flurometer
2. Measure House Air Tightness
3. Measure Fan Capacity
4. Check Air Inlets are Open
5. Measure Average Air Speed

INTRODUCTION

The How To's are designed to be simple, back to basics documents describing critical management areas, their importance and how to achieve them. The Breeder Management How To's describe key management practices for breeders. Achieving best practice in key management strategies at key ages will help maximize flock productivity.

HOW TO...
1. Set Up a Spot Brooding Circle
2. Set Up Whole-House Brooding
3. Monitor Temperature and Relat
4. Assess Crop Fill
5. Bulk Weigh Broilers Between 0
6. Individually Weigh Broilers From
7. Take a Representative Feed Sample
8. Measure Nipple Drinker Flow Rate

SUMMARY

Broiler producers aim to attain the best performance from their flocks. In order to achieve this target, they must provide the environment and conditions that will allow the birds to express their genetic potential in a wide range of environments. This involves paying close attention to bird welfare, chick quality, nutrition, management, and environment.

Achieving genetic potential during periods of excessive or prolonged high environmental temperatures creates a particular set of challenges for the broiler producer. The key is to have facilities in which the environment can be controlled and to use specific management strategies that will help to minimize the impact of high temperatures on bird performance.

This document looks at providing advice on how to best manage flocks during periods of high environmental temperatures.

For more information on the management of Aviagen® stock, please contact your local Aviagen representative.
We are good at investing in People
Research, Development, Trainers, Producers
Poultry production needs to increase sustainably to meet the rapidly increasing demands in Africa and Asia.

Genetic improvement is key to sustainable improvement in livestock production.

This must be complemented by good knowledge and skills in managing animals of high genetic merit. So that producers and the environment can benefit from genetic improvement.
Discussion points

• Poultry production needs to increase (No doubt)
• Increase has to be sustainable (Critical)
• Most increase in Africa and developing regions of the world (Obvious)
  – Poor infrastructure
  – Low technology uptake
  – Poor management skill
• Balanced genetic improvement is key to sustainable increase (on it)
• Management of high genetic merit animals is also important
• Human capacity development (Knowledge and skill) essential

• So what can we do?
  – Ensure efficient production in less resourced regions of the world
  – Skill development in managing animals of high genetic merit
  – Support infrastructure development
  – Support technology uptake