Key success factors from the broiler industry

Lessons for the salmon farmer?

Dr John Ralph
Global Head of Technical Systems, Aviagen
Background

Breeding Operations

World’s leading poultry breeding company
Operations around the World
2600 employees
Distribution network serving 120 countries

Aviagen Group

Broiler

Turkey

Egg Layer

Aquaculture
Chicken – A successful product?
Parent Stock Market Volumes

North America: 81 mil PS
Latin America: 90 mil PS
Europe: 77 mil PS
Middle East & Africa: 59 mil PS
Asia, Australia & New Zealand: 113 mil PS

Total: 420 million
Human Population vs Chicken Meat Consumption

- Norway 15kg/person

- Consumption: 11.3kg/person
- Human Population: 81.4mt
- Chicken Meat Consumption: 75.7mt

+25m PS
+50m PS

Million people: 8,000
Consumption kg/person: 14
“An expanding market keeps the manufacturer from having to think very hard or imaginatively about how to expand the market.”

Marketing Myopia, Levitt, HBR 1960

The success of chicken is not just due to an expanding market.

What has made it successful?
Success factor #1

Consumer demand
Why do people buy chicken?

- Affordable
- Versatile
- Predictable quality
- Healthy
- Ease of preparation
- Product range
- No religious issues
- Availability
- Responsive to consumer concerns
Chicken – Affordable protein

Minutes of work in Norway to purchase 1kg

<table>
<thead>
<tr>
<th>Item</th>
<th>Minutes of Work</th>
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<tbody>
<tr>
<td>Chicken</td>
<td>19</td>
</tr>
<tr>
<td>Pork</td>
<td>26</td>
</tr>
<tr>
<td>Fish</td>
<td>30</td>
</tr>
<tr>
<td>Beef</td>
<td>95</td>
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Working time purchasing power survey, IMF, 2010
42 days of age

Unselected 1972 control broiler

Selected pedigree broiler

In real terms, the price of chicken has fallen by 75% since 1960.

Australian Chicken Meat Federation
Product Diversity

Supermarkets sell more than **230** different kinds of chicken products - from chicken soup to chicken curries and chicken pies to barbecue drumsticks.

Source Daily Mail
Healthy

- Low fat, low cholesterol
- Movement away from red meat

UK Meat Consumption
Kg/Capita/Annum

- Bovine Meat
- Fish, Seafood
- Poultry Meat
Responsive to consumer concerns

• Health
  – Salmonella control
  – Campylobacter
  – Antibiotic use
  – Avian Influenza

• Welfare
  – Legislation, codes of practice, supplier requirements
  – Transport, stocking density, access to light, feed and water, hock burn, footpad dermatitis, stunning……..
  – Skeletal strength, disease resistance, cardiovascular function

Alternative production systems offer consumer choice
Success factor #2

Reliable production systems, predictable inputs and outputs
Reliable production systems

- Controlled environment
- Health management
- Biosecurity

- Highly predictable stock performance and output volumes
Potential Sources for Disease

- Source flocks (vertical)
- Other poultry & livestock
- Feed
- Housing
- Rodents
- Water
- Wild birds
- Equipment
- Hatchery
- People
- Litter
- Insects
Biosecurity in practice

• Management
  • All-in / all-out sites
  • Day old chicks of a high health status.
  • Same age and antibody status
  • Controlled personnel access
  • Footwear, clothing
  • Hygiene between flocks
Biosecurity in practice

• Production facilities
  – Farm size – small farms / large farms
  – Barrier (showers, etc)
  – House design
  – Other farm livestock
  – Insects
  – Wild birds
Biosecurity in practice

- Feed and water
  - Feed treatment
  - Water sanitisation

- Health program
  - Biological barriers – Vaccines, Probiotics
  - Pharmacological controls – Antibiotics, Coccidiostats

- Monitoring
  - Diseases, vaccines, biosecurity effectiveness, investigation
Predictable production
Understanding production economics

Least cost ≠ maximum profits

Market volatility:
Optimal nutritional response is dynamic

Range of modelling tools to support customer needs
Success factor #3

Specialisation of breeding operations
Breed importance

Breeding companies - an integral part of the industry

• Breeds are readily comparable
  – Drives competition between breeders
  – Tangible performance improvements
• High health status source stock for the industry
• Predictability of stock performance
Selective breeding conducted EXCLUSIVELY by a small number of highly specialised breeding companies.

It is a different business from meat production

- High technology investment
- Global distribution network
- Diverse range of genetic lines
- Technical back-up and support
- Isolated, specialised, bio-secure, facilities
- Diverse products
Chicken Primary Breeders
Genetic Selection Criteria

1960:
- Liveweight

Now:
- Liveweight
- Skeletal Integrity
- Eggs
- Heart/Lung Fitness
- Hatchability
- Feed Conversion
- Weight
- Growth Profile
- Immune Response
- Meat Quality
- Breast Meat
Impact of FCR improvement on Norway

1. Annual Chicken Meat Production

Norway Chicken Meat Production
Tonnes per annum

- Annual production from 1960 to 2020, showing a steady increase in tonnage.
### Impact of FCR improvement on Norway

#### 2. Feed cost saving and sustainability

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<th>Norway</th>
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<tbody>
<tr>
<td>tonnes</td>
<td>70,000</td>
</tr>
<tr>
<td>kilos meat</td>
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<td>kilos birds</td>
<td>101,449,275</td>
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<td>birds</td>
<td>50,724,638</td>
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**Value of improving FCR by 0.02 to Norwegian industry**

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<tr>
<td>feed</td>
<td>182,608,696</td>
<td>180,579,710</td>
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<td>cost</td>
<td>€65,739,130</td>
<td>€65,008,696</td>
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<tr>
<td>fcr</td>
<td>1.80</td>
<td>1.78</td>
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**Saving to Norwegian Industry**  €730,435

Assume Feed is all wheat  Yield 8 Tonnes per hectare

Save approx. 300 hectares
Breeds to satisfying market diversity

• Variety of breeds available to satisfy these segments
  – Growth rate, reproductive capacity, yield, efficiency

• Genetic lines available to satisfy future market requirements
Address industry issues through breeding

HIGH IMPORTANCE OF SUPPORTING TRAITS IN BREEDING PROGRAM

- Metabolic Fitness
- Welfare Traits
- Liveability
- Skeletal Strength
- Disease Resistance
- Pathogen Freedom
- General Robustness
Biosecurity of the production chain starts with the breeder

- **Isolated** Farms
- **Continuous** monitoring and testing
- **Regular audits** from authorities
- **Restricted entry** to non-essential personnel
- **Shower in/out** all production facilities
- **Restriction of ownership** of ‘pet’ birds
- **Comprehensive staff training**
Supporting customers in maximising breed performance

- Local technical support
- Specialist support in nutrition, health, R&D and e-technology
- Aviagen Schools
- Laboratory Training
- Technical Literature
- Presentations
- Seminars
Lessons for the salmon Farmer?

• Product appeal to as wide a market as possible
  – Availability, affordability, choice, product consistency

• Reliable production – get health under control
  – Breeding for disease resistance
  – Farm management
  – Processes – equipment, people

• Recognise the value breeding brings to the industry
  – It is a different business
  – Fundamental to industry success
  – Find ways to measure and evaluate stock

• Improve technical knowledge
  – Least unit cost production v’s margin maximisation