The Egg Industry

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Egg Industry Flow Chart

Genetics → Breeders → Hatchery → Pullet Grower → Egg Layer → Egg Grading → Egg Sales & Distribution

Feed flows through each stage.
Domestic Poultry in Australia

- Poultry brought in with First Fleet in 1788
- Over the years many varieties imported
- Importations banned early 1930’s
- Importation permitted from 1992 under strict quarantine procedures
Australian Breeds

• Due to importation bans Australian poultry breeders developed stock from the existing gene pool

• Used both for egg laying and meat until 1960 when the heavier breeds were developed into separate meat strains.
Layer Breeds in Last 45 years

- Prior to 1960 – a large number of small breeder companies
- 1960 - commencement of larger breeder companies to develop genetic strains
- 1992 - first imported layer strains and progressive change to imports
- By 2000 - Australian genetic strains totally replaced by imported genetics
- Now 2 main genetic breeder companies in the world
Layer Strains in Australia

- Virtually all commercial layer hens derived from overseas genetic stock
- Currently all commercial layer hens are “brown egg layers”
- It is not possible for a small country like Australia to keep pace with international genetics which necessitates frequent importation.
Genetics Importation

Great Grand Parents (GGP) Imported from overseas (Hatching eggs to quarantine stations)

Chicks transferred to company genetic farms @ 9 weeks age

Grandparents (GP) hatched

Parents hatched

Commercial chicks hatched
Genetic Selection Traits

Many traits – the main ones as follows:

• Number of eggs
• Feed conversion to eggs
• Livability, health traits
• Shell strength and internal quality of eggs
Brown Egg Layers are colour-linked

**PARENTS**
- Sires (Males) are Brown
- Dams (Females) are white

**OFFSPRING**
- Cockerels (Males) are white
- Pullets (Females) are brown
Brown Egg Layers are colour-linked

Sire and dams
Brown Egg Layers are colour-linked

Offspring – cockerels and pullets
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Feed flows to Breeders, Genotypes, and Egg Layer, as well as from Hatchery, Pullet Grower, and Egg Layer.
Breeders to Chicks

Breeders
Breeders to Chicks

Fertile eggs
Hatchery Building
Incubators
Breeders to Chicks

Hatched offspring at the hatchery
Day Old Brooding Cage
Beak Trim / Vaccination

• Most chickens have beaks treated at day old using infrared technology to reduce the risk of injury through pecking

• Laying hens are typically vaccinated for a number of poultry diseases
Vaccinating Day Old Chicks
Grower Site
Brown Egg Layers – “brands”

Hisex
Developed in Holland

Hy-Line
Developed in USA

ISA
Developed in France
Environmental Balance

Large gains in efficiencies and productivity over the last 30 years:

- Lower feed intake per hen
- Lower manure by-product - better feed conversion
- Less water used - use of evaporative coolers instead of sprinklers

The industry has become resource efficient
Key Management Factors

- Feed
- Water
- Lights
- Environment
Key Management Factors – diet & water

• **Feed**
  
  A balanced diet
  
  Access to feed at all times

• **Water**

  Fresh clean water

  Access to water at all times

• **Lights**

• **Environment**
Nutrition

• All poultry feeds are scientifically formulated

• Different rations to meet requirements
  • Chick starter
  • Grower
  • Layer
  • Breeders
Key Management Factors – light & environment

• **Feed**

• **Water**

• **Lights**
  - A steady light pattern to maintain production – typically 16 hours/day
  - Reducing day length will cause hens to cease laying and enter a “moult” phase

• **Environment**
  - Protected from the elements - minimise extremes of heat and cold
Shed Ventilation
Evaporative Cooling
Egg Industry Housing Development

- 65 years ago - All free range
- 60 years ago - Intensive (Deep litter)
- 50 years ago - Cages
- 20 years ago - Modern cages / Environmental housing
- 10 years ago – Increase in barn / free range
Production Systems

- Cage: 79%
- Free Range: 18%
- Barn: 3%
Shed Environment - controlled & monitored
“People are the key”
Cages

**PROS**

- Higher productivity
- Less impact on environment
- More efficient use of resources
- Cleaner eggs – less bacterial contamination
- Better working conditions

**CONS**

- Not seen as welfare friendly
- Hens can’t scratch or dust bathe
Cage Shed
Modern Layer Cages
Free Range
Housed in sheds with access to outside range

**PROS**
- Viewed as welfare friendly
- Nests / dust bathe / perch
- Birds can access outside range

**CONS**
- Lower productivity
- More bacterial contamination on egg shell
- Poor work environment – dust; obstacles; floor eggs
- Danger from predators
- Greater disease risk
- Wild birds can access yards
- High risk from parasites
Free Range
Barn
Free to roam inside shed

**PROS**
- Nests / dust bathe / perch
- Protected from predators
- Wild birds are excluded

**CONS**
- Lower productivity
- More bacterial contamination on egg shell
- Poor work environment – dust; obstacles; floor eggs
- Higher disease risk
Bio-security

Most sites have bio-security policy to protect bird health

• Isolated from other poultry/birds
• Restricted access to site
• Some sites require “shower-in”, protective clothing and footwear disinfection
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Feed

Discoverers Welcome

Murdoch University
Manure Cartage
Egg Packing at Farm
Eggs to be Delivered to Grading Floor
Egg Delivery
Layer Hens Numbers National

Laying Hens (millions)
NSW = 4.20
Vic = 3.50
Qld = 3.00
WA = 1.20
SA = 0.70
Tas = 0.22
NT = 0.05

TOTAL = 12.87 MIL
Backyard Hens

- Estimated 60,000 kept as backyard hens in WA – up to several hundred in a flock.
- Most in outer metro areas and the country
Egg Industry Standards

National Egg Quality Assurance Program
Code of Practice for Welfare of Poultry
Environmental Code of Practice for Poultry Farms
HACCP (Hazard Analysis & Critical Control Points)
Food safe programs
### Layer hen performance indicators

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<tbody>
<tr>
<td>Mortality to 16 weeks</td>
<td>1.8%</td>
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<tr>
<td>Peak Production</td>
<td>98%</td>
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<tr>
<td>Daily Feed Consumption (Lay period)</td>
<td>107 grams</td>
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<tr>
<td>Mortality 16 weeks – 78 weeks</td>
<td>3.5%</td>
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<tr>
<td>Hen Housed Eggs @ 78 weeks</td>
<td>356</td>
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<tr>
<td>Feed to Eggs (kg/kg)</td>
<td>2.10</td>
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<tr>
<td>Kg feed / Dozen Eggs</td>
<td>1.65</td>
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Egg production Per Hen Housed

- 1960
- 1970
- 1980
- 1990
- 2000
Egg Production / Consumption

- Hen numbers relatively constant 1970-2000
- Egg consumption increase per capita
- Extra eggs per bird achieved through:
  - genetics
  - nutrition
  - management
  - disease control
  - housing
Increased Egg Consumption

1970’s
Cholesterol issue
Lifestyle changes
More food choices

2000’s
Cholesterol issue now dismissed
High protein / low carb diets
Recognition of nutritional values
Promotional levy
Egg Cost Inputs

Feed  
Chick  
Finance  
Labour
Egg Industry Challenges

- Dominance of major supermarkets
- Reduced returns
- Government regulations
- New site approvals for poultry farms
- Unscientific and uninformed analysis in welfare and environmental issues