Studying laying hen and broiler welfare in commercial contexts

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Leading the way in Agriculture and Rural Research, Education and Consulting

Why important?

- Historically, a lot of behaviour and welfare poultry research was done in research facilities
  - Good control (all replicates in same shed, same management)
  - Easy access for researchers
- Increasingly, we arrange research in the field
  - Commercially relevant
  - Are effects seen in presence of variation?
    - Broilers may use low perches in small pens, but still true in big sheds when installed differently?

Behaviour measures

- How birds behave vs expected time budget
  - Compare strains/breeds against standard
    - Jungle fowl versus modern laying hen
    - Broiler breeder versus a layer breeder
    - Slow-growing to fast-growing broiler
  - Compare between housing systems
    - Free range versus enriched cage (hens)
    - Conventional versus extensive floor rearing (broilers)
  - Compare management techniques
    - Beak treated versus beak blunting feed pans
    - Litter types to preserve foot/leg health

Welfare measures

- Physiological measures
  - Blood parameters (e.g. stress hormones)
  - Neuropeptides (e.g. metabolic hunger)
  - Brain activity (e.g. loss of consciousness, sleep)
- Response in behavioural tests
  - Tonic immobility (fear)
  - Water runway (motivation to reach the other side)
  - Rate of eating (hunger)

Team

- Poultry behaviour and welfare specialists
  - Laura Dixon
  - Rick D'Eath
  - Technicians (L Baker, J Donbavand)
  - 2 PhD students (both working w/ industry)
- Close collaboration with Roslin Inst., Univ of Newcastle, Univ of Guelph
  - Broiler breeder hunger paradox
  - Naturally occurring beak variation
  - Objective measures of stress in hens

How?

- We propose an idea to relevant industry body, or you can approach us
  - British Free Range Egg Producers Association
  - Breeding Company
  - NGO
- Work up protocol
  - Numbers required (birds or flocks or participants)
  - Data to collect
  - What will it cost… ☺

Funding

- Joint funding
  - Via UK research council (e.g. BBSRC Industrial Partnership Awards; industrial Case studentship)
  - Via EU funds…
- Core funding SRUC receives through Scottish Government
- Funded solely by the industry
  - Partly in kind (access to birds, farms, farmers)
  - Cash
- Innovate UK (government scheme)

Innovate UK

Home > Environment > Food and farming > Food and farming industry

News story

Helping farmers to work more efficiently: apply for funding

Businesses can apply for a share of up to £15 million to look at more efficient and environmentally friendly ways to produce the UK's food.

Published 20 December 2019
From: Innovate UK and UK Research and Innovation

Effects of different lights types on broiler behaviour

- Small poultry rooms at our research facility
- LED manufacturer with different colour LEDs versus tungsten
- Pens of broilers from hatch to slaughter
- Recorded behaviour and growth
- Highly controlled, completely independent
  - LED manufacturer provided lights, fittings, and control box

Reported in World Poultry 2015

News *Jun 8, 2015*

No detrimental effects on broilers from LED lighting

comments: 0 views: 1870 label: Broilers

A study by Scotland's Rural College (SRUC) into the effects of LED lighting on broiler chickens has found that there were no detrimental effects in comparison to more traditional tungsten lighting.

Photo:Peter Roek

The small study was carried out by researchers from Scotland's Rural College, in conjunction with lighting manufacturers KEW LEDs. It was funded by a grant from the government's Innovate UK Technology Strategy Board.

Effects on livestock unknown

Tungsten (and fluorescent) lights are being superseded by more efficient technology such as low-emitting diodes (LEDs), however their effects on livestock are unknown. Researchers investigated if there were major differences in broiler performance and welfare under 4000K cool, 3000K warm, and 3500K plain ('neutral') white LEDs (LC, LW, LN respectively) or tungsten incandescent (T) lighting.

More comfort behaviours

Multi tier versus flat deck

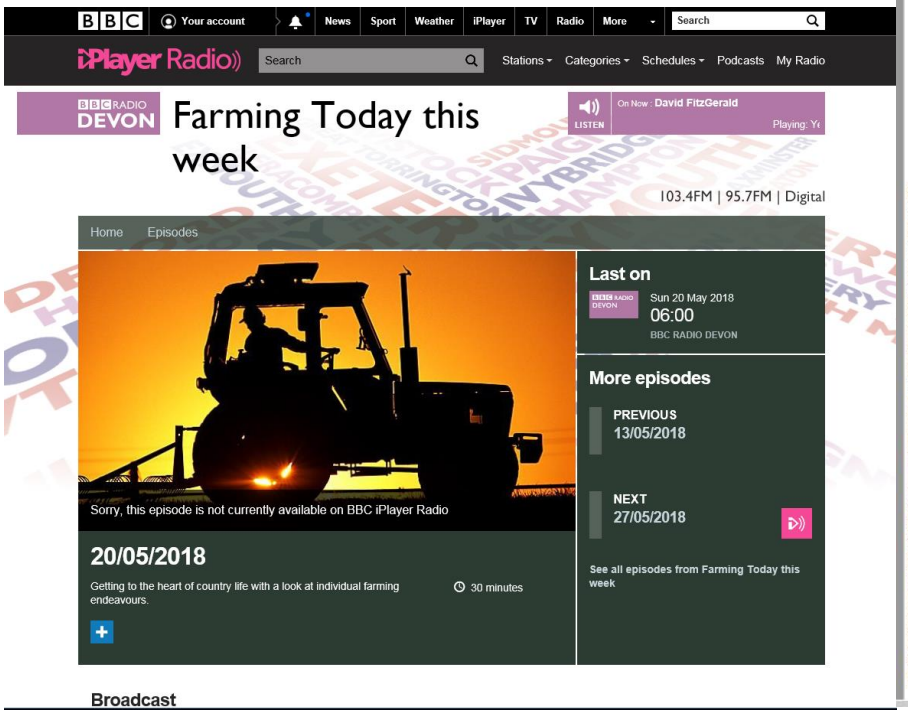
- Visited 42 flocks across UK
- Welfare and economic benefits of each system
- Means by system, but also each flock was ranked
  - Farmers could see where they sat

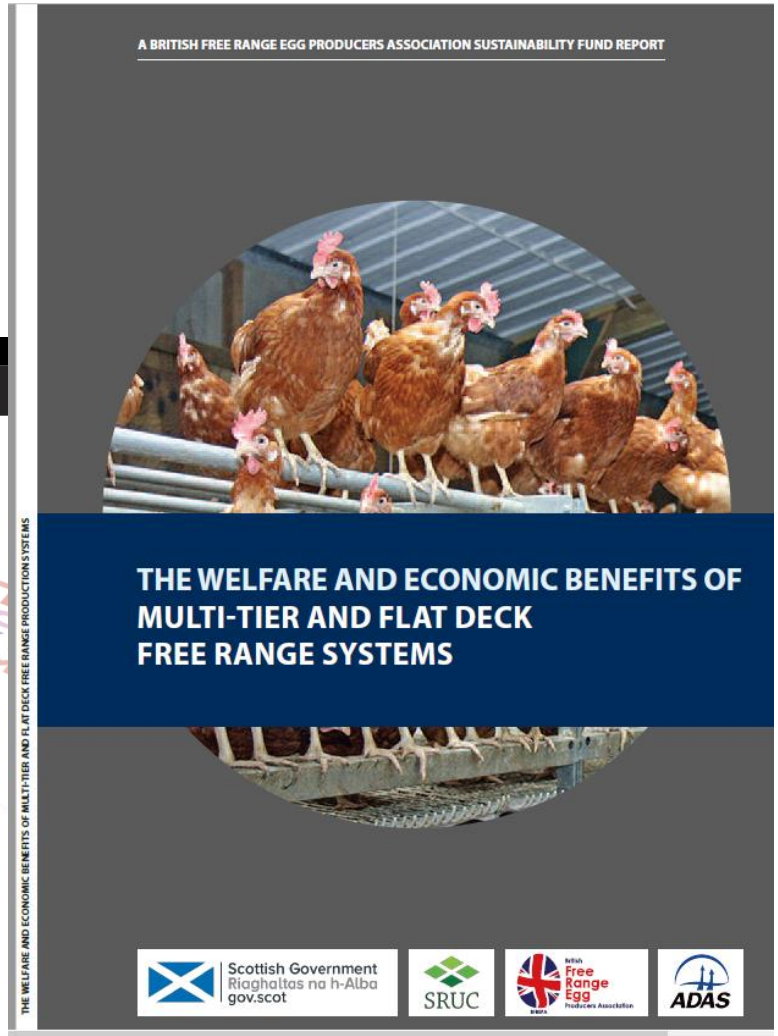
Keel bone fracture or deviation (twist, dent), assessed in up to 30 hens per flock
Mean percent of birds assessed

	MT	FD
KB fracture	**48%**	**28%**
Range:	**10-67%**	
KB deviation	**7.4%**	**3.2%**
Range:	**0-37%**	

Reported at P&P Fair, and The Ranger (July 2018)

- Farming Today radio programme interview
- 20 May 2018





Enrichment use in multi tier

- Is feather pecking ⬇?
- SG and BFREPA

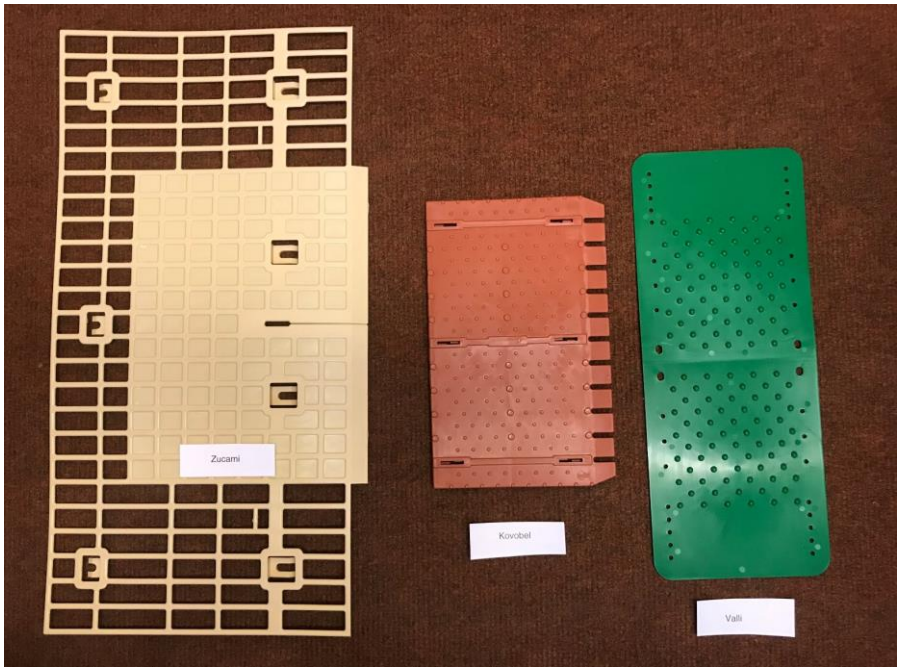
Assessing suitable breeds for production

- Some assurance schemes require that breeds meet particular standards of production and welfare measures (eggs, meat)
- Independent measures, outside of the breeding company or the assurance scheme

Reviews

- We can produce literature reviews on particular subjects
  - For publication
  - For information
    - The pros and cons of various processing methods for meat recovery (meat processing company or supermarket)
    - Welfare consequences of infra red beak treatment (NGO)
    - Effects of feed supplement to reduce keel bone damage without affecting egg quality (egg company)

Investigating scratch mat use



- Enriched cages
- Mats vary in size, colour, material, location per cage type
- How do they affect pecking and scratching behaviour
- Funded by SG
- Commercial farm participant

Wide benefits

- Ensure that question is well researched, that results are objective, written up for public domain or kept confidential
- Scientific publications
- If you want something investigated, don't hesitate to ask us
  - We also work closely with social scientists (e.g. public acceptance), engineers (e.g. new perch designs), farm consultants
  - We work around the world! (e.g. sharing management techniques for hens in Africa)

SRUC

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