

BROILER CHICKEN CASE STUDY

UK 1: RSPCA FREEDOM FOOD

INDOOR FARM

An account of a higher welfare indoor system with slower-growing birds, reduced stocking density and environmental enrichment, including natural light.



RSPCA FREEDOM FOOD INDOOR SYSTEM, LANGALLER FARM, SOMERSET, UNITED KINGDOM

Higher welfare indoor system with reduced stocking densities, natural light and enrichments, including straw bales to encourage active behaviours, and perches.



This is a study of a higher welfare indoor system designed to produce higher welfare chicken at a reasonable price. The system is certified by Freedom Food, an inspection and certification system designed to improve the welfare of farm animals. Freedom Food is owned by the RSPCA, who set its standards. The RSPCA set standards for higher welfare indoor production, as in this example, as well as for free-range and organic systems.

To improve welfare, the RSPCA welfare standards for all systems include specific requirements:

- Use of slower growing breeds which have better welfare outcomes (listed opposite). Parent birds of these breeds are also likely to require less feed restriction;
- Lower stocking densities than are permitted by legislation;
- Environmental enrichment including natural light, bales of straw, perches and pecking objects.

The system has positive welfare outcomes:

- Birds remain much more active throughout life, which is beneficial for leg health and litter quality;
- Lower levels of mortality, hock-burns, footpad dermatitis and lameness;
- High levels of health so that most flocks do not require any antibiotics to treat or prevent disease.

Breed

Robust, slower growing breeds such as those used on this farm are easier to keep healthy. They appear to have good immune systems, reducing the likely need to use antibiotics. Slower growing bones and joints are more likely to form properly before the development of large muscle mass, reducing the risk of infection and lameness.

The lower demands on a bird's metabolism means it is easier for the heart and lungs to keep up. This leaves more energy for exercise and these birds are more active. Their slightly smaller breasts mean their bodies are less top-heavy and it is easier for them to get around. Exercise is good for health and helps to reduce lameness.

RSPCA standards stipulate that breeds of chicken used in the system must not have the genetic potential to grow more than 45g per day on average¹. This means that it takes at least seven weeks for the birds to reach a slaughter weight of 2.2kg if they are grown with the best feed in optimum conditions.

Slower growth rates are required to reduce the risks of lameness and mortality levels from conditions such as ascites (fluid in the abdomen) and Sudden Death Syndrome (a heart condition). An additional key purpose of this requirement is to reduce the levels of feed restriction required to keep broiler breeders productive and healthy (see below).

Langaller Farm mainly keeps Hubbard JA757s, an active breed with low levels of lameness, which meets RSPCA requirements.

Active breeds of chicken are better able to express the full range of natural behaviours known to be good for mental health. Exercising more is also good for leg health. They are also better able to perch, where perches are provided, which helps reduce the risk of lesions such as hock burns.



JA757 birds competing for a fallen morsel. This breed is particularly active.

Broiler breeders



Broiler breeders supplying Freedom Food systems, photographed in 2003. Hens, who are brown, have feed available ad lib. Males, who are white, are fed once a day.

Male and female broiler breeders are the parents of meat chickens and between them they share the genetics which make their offspring grow fast. The Freedom Food scheme does not monitor the welfare of broiler breeders, but the lower growth rate requirement for their offspring is designed to improve the welfare of their parents.

Some breeds of broiler chicken are bred for fast growth, but it is not a desirable trait in a broiler breeder who needs to maintain health and produce fertile eggs over a longer life-span. Oversized broiler breeders suffer a range of health problems and their fertility is compromised. They need to be fertile to produce eggs for hatching.

A key welfare benefit of using slower growing breeds of broilers is that parent birds require less feed restriction. Moderate weight is maintained in broiler breeders with fast-growth traits by keeping them on a strict diet. Restricting fast growth through limits to food intake is good for production and prevents poor physical health, but the feed restriction causes chronic hunger for broiler breeders. This can result in stereotyped, spot-pecking behaviour, over-consumption of water and in some cases head-pecking. The highest levels of feed restriction are during the rearing phase. These are relaxed during production, especially for females who need



Female JA57 broiler breeders. This is a dwarf breed with good production of fertile eggs. They can remain fit, healthy and productive without feed restriction during the laying period.

additional nutrition to produce eggs. The female parents of the JA57 breed kept on this farm, the JA57, have access to feed throughout their productive lives. The male parents for JA57 birds are standard males who do require feed restriction to avoid ill health and infertility and are therefore only fed once a day.

Stocking density



Low stocking densities and enriched environments are good for both physical and mental health.

RSPCA Freedom Food birds are given more space than is required by legislation. The maximum stocking density is 30kg/m² for indoor systems which works out at around 14 birds per square metre. This is significantly less crowded than the 39kg/m² permitted in Britain² and the 42kg/m² permitted by the EU Directive³. These work out at around 17-19 birds per square metreⁱ.

Lower stocking densities can improve the environment in many ways:

- Environmental temperatures caused by body heat;
- Humidity caused by evaporation from the birds and related to their activities;
- Ammonia pollution resulting from bird droppings.

This also improves the quality of the litter, so it is less likely to get damp. This reduces the production of ammonia from the decay of the birds' faeces, reducing the risk of breast blisters and hock and footpad burns. Good ventilation is also important for improving litter quality and reducing ammonia levels.

Lower stocking density also improves welfare by giving the chickens space to move around, reducing jostling and facilitating exercise.

ⁱ Figures for birds per square metre are at a slaughter weight of 2.2kg. All these densities can be higher where thinning is practised.

Environmental enrichment



Enrichments include perches, straw bales and natural light.



JA57 perching.



Colouryield cross birds provided with footballs as pecking objects. In general, edible and destructible pecking objects such as straw bales make the most effective enrichments.



Natural light and space encourage natural behaviours such as this ritualistic sparring. JA757 birds with one JA57 colouryield cross front right.

A more stimulating environment can encourage the birds to be active and display natural behaviours. The environment is enriched through several methods:

- Natural light. A line of double-glazed windows the length of the building encourages greater bird activity. The amount of windowed space provided must be to at least 3% of the total floor area of the building;
- Perches. Chickens naturally perch, though some broiler breeds find this difficult as they get larger and heavier. The provision of perches enables birds to perform this natural behaviour and it helps to keep them away from the litter, so reducing risk of lesions such as hock burns;

- Bales of straw or of Miscanthus also allow birds to perch. It also encourages scratching and foraging behaviour as they dismantle the bales;
- Pecking objects. The provision of footballs or hanging CDs (the CDs have since been replaced by rope) can also give the birds something to do, though the edible objects are the best. The welfare standards recommend brassicas and hanging wooden blocks.

All these enrichments encourage natural behaviour and encourage exercise which is good for leg health.

Welfare outcomes

The purpose of using slower growing breeds, increasing space allowance and enriching the environment is to improve welfare. To be sure this works, welfare outcomes need to be measured. Are the birds more active? Do they walk more easily without painful lameness? Do they suffer less from lesions such as hock burns and footpad dermatitis? Are levels of sickness and mortality reduced?

The RSPCA welfare standards require farmers to monitor a range of welfare outcome measures and set targets for them⁴. These include lameness, back scratches as well as hock burns, footpad burns and breast blisters. Hock and footpad burns are recorded at the slaughterhouse.

Birds on this farm showed good welfare outcomes. The JA757s are highly active, showed low signs of lameness or gait abnormality and no hock or footpad lesions were observed. Mortality levels average 2.5%.

Previous research conducted at farms which are part of the same group indicated low levels of mortality (1.8%) and hock and footpad lesions (3.5% each)⁵.

The farm was not using antibiotics currently and the birds appeared to be in good health. This is consistent with other anecdotal evidence that this system requires less antimicrobial use, a powerful positive welfare outcome.

Good welfare outcomes are likely to be a result of a combination of breed, lower stocking density, ventilation and environmental enrichment together with good management.

Exercise is good for all animals and these birds are active. This is partly because slower growth can facilitate well-balanced development and also because it leaves more energy for exercise. It is partly because they have a lower centre of gravity, due to a smaller proportion of breast meat, which facilitates movement. Lower stocking density leaves them space to move around and high levels of light and other enrichments further encourage exercise. All of this exercise in turn is good for leg health which also benefits directly from the slower growth.

Active birds also spend less time in contact with the litter, reducing the risk of lesions such as hock burns. Perching also reduces risk. Anecdotal evidence from a previous farm visit also suggested that litter management is easier with these breeds. This may be due to slower, more efficient digestion. Skin health itself may vary between breeds.

Alternatively, it is also the case that lower stocking density will reduce the moisture and nitrogenous wastes produced by the birds, reducing the amount of ammonia produced by bacteria in the litter. Together these may explain the relatively low levels of hock and footpad burns in this system.

Market

The Freedom Food scheme currently has around 2% of the British chicken market sales⁶. Freedom Food certified indoor chicken is sold at a price intermediate between standard and free-range chicken. In one supermarket visited, it retailed for around 20% per kilo more compared to standard chicken, and around 10% lower than free-range¹. It is marketed to consumers who are looking for a higher welfare chicken at an affordable price.

The moderately higher retail price helps to cover the cost of production. This is increased by the reduced number of chickens produced per year in each shed. This is partly due to the reduced stocking density and also to the longer time it takes for the slower growing birds to reach slaughterweight. Food conversion efficiency is also slightly less efficient, mainly due to the longer lifespan.

However, the better health of the birds results in cost benefits. According to RSPCA research⁷, this includes:

- Lower mortality rate;
- Lower numbers of “dead-on-arrivals” at the slaughterhouse;
- Fewer slaughterhouse rejects;
- A significantly higher percentage of Grade A birds;
- Lower levels of hockburn and footpad burn.

There is evidence also of health benefits for consumers buying chicken to look out for slower growing birds⁸. Altogether, higher welfare production can be profitable. The higher value of the birds at retail also increases the total value of the poultry market.

¹ Prices per kilo for whole chicken in Sainsbury's, Godalming, 24/02/12 were “Basics” £2.39; Standard £2.96; Freedom Food £3.57; Freedom Food corn-fed £3.95; Free-range £4. This group supplies Sainsbury's, though we cannot be sure these chickens did not come from a different supplier.

Future developments

The RSPCA is involved in a welfare outcomes assessment programme called *AssurWel*⁹. This is in conjunction with the Soil Association, the UK's leading organic association, and the University of Bristol. It is an aim of AssureWel to examine outcome measures for broilers by 2015.

Currently, the producer removes about 20% of the flock for slaughter at 42 days of age, a process called thinning. The RSPCA is considering banning thinning to reduce stress to the animals, but currently permits this to occur once. However, there are specific standards in place to help reduce any stress associated with this practice. Prohibiting thinning would remove stress caused by the additional catching process and preparations for it. Where thinning is not practised, it is usual to start with a lower initial stocking density, so the birds have more space. However, this additional space would increase the cost of production.

The RSPCA is also planning to set requirements for broiler breeder farms in future.



Bale of Miscanthus grass provides a perch and also encourages scratching and foraging behaviours.

SUMMARY

This is a system with benefits for people and chickens which the producers believe is “a realistic compromise for welfare that is feasible”.

1. **For consumers, it provides a higher welfare bird for a modest additional cost. The added value in the product also helps to support the rural economy.**
2. **For the birds, it means better health and higher welfare in return for a modest reduction in food conversion efficiency.**
3. **For the stockperson, working a system with active birds enjoying higher welfare is a rewarding experience. According to the farmer David Christopher: “The benefits to me [means the system is] more pleasant to work with ... The birds look better, streets ahead and the pleasure of working with the birds is much greater. Much better welfare”.**

A less intensive system is easier to manage. Lower stocking densities makes it easier to walk around the shed as the birds reach their slaughterweight. Together, they make it easier to inspect the birds. Better bird health means less time picking up bodies or culling sick or lame ones. As one stockman states: “[there is a] lot less input needed for these”.

4. **The environment inside the shed with natural light and lower levels of ammonia provides a more pleasant environment for people as well as animals.**
5. **Keeping birds healthy through the use of robust breeds in environments which keep stress levels lower has potential benefits for human health. Producers say they “very rarely have to give antibiotics”, suggesting that keeping more of these kinds of breeds in these kinds of system could contribute to strategies for reducing antibiotic resistance. That way essential medications will be better able to continue to work to protect the health of both humans and animals.**
6. **RSPCA welfare standards include stipulations about catching and maximum transport time.**

TABLES

BROILER – DESCRIPTION OF SYSTEM	
Date/Time of visit	29 th November 2011 11.30am
Farm	Langaller Farm
Farm Type	Higher welfare indoor
Certification scheme	RSPCA Freedom Food 
Total number of birds on farm	39,750
Number of birds per shed	13,000
Breed	Mostly JA757
Age of flock on visit	33 days
Feed type/amount/delivery/energy/protein	<i>Ad libitum</i> , pan feeder, pellets' nipple drinkers, pan feeders
FCR (average for this group of RSPCA Freedom Food indoor systems in this area)	1.96
Maximum stocking density	30kg/m ² (around 17-18 birds/m ² till 42 days, then reduced by 20% to around 14 birds/m ² at thinning)
Age and weight at thinning (average GR)	42d at 1.7kg (40.5g/d) Non-segregated around 20% flock removed at thinning
Age and weight at slaughter (average GR)	49d at 2.1-2.2kg (42.9-44.9 g/d)
Mortality and cull rates	Average 2.5% (recorded daily)
Hock burn rates at PMI will need to ask for average information (same for FPD)	None observed. Figures of less than 4% have been documented for this scheme ¹⁰ .

Foot pad dermatitis rates	None observed. Figures of less than 4% have been documented for this scheme ⁵ .
Other health/welfare problems E.g. Leg problems, Ascites.	None observed. Flock exhibited good walking ability.
Natural behaviours observed	Perching on bales and perches Pecking at straw bales Walking / running / preening / agonistic interaction / meal worm-paper test (+)
Level of activity	Good Move away up to 10m or so as approach
Antibiotic use, risk assessment systems	None used at present
Welfare problems E.g. Aggression, feather pecking	Can get back scratching and wing damage due to flighty nature
Light and dark provision	Natural plus artificial Double glazed windows along length of house. Windowed space to be at least to 3% of floor area. 1h dark at day old rising by around 1 hour per day to 6h dark by 6 days. Reduced to 2 hrs two days before thinning then re-instated. Reduced to 2 hrs dark two days before depopulation. Shutters closed 1 week and depopulation to calm birds; 20 lux maintained.
Ventilation	Fan assisted
Litter	Miscanthus bedding – created by hammer chopper method Good condition
Indoor environmental enrichment	Sloping perches, bales (1.5/1000), toys (footballs)
Number of stockpersons	1 full-time (including maintenance and administration)
Frequency of checking birds and any rules about thoroughness	Scheme requires a minimum of three checks per day. At least one of these checks must be sufficiently thorough to identify any bird showing signs of poor health or injury. Lower stocking densities facilitate this.
Transport to slaughter	17 miles. Double leg catching required. Scheme also permits a maximum 4-hour journey time.
% Dead on arrivals	No figures, but low figures of 0.05% have been reported for the scheme ¹¹ .
Market	Whole bird and for portions
Cost/price	Sainsburys charge £3.57 per kilo for Freedom Food indoor birds – Godalming 23.02.12 (25% more than <i>Standard</i> and 50% more than <i>Basic</i>). Checking prices a year later, the costs were £3.93 per kilo for Freedom Food indoor, 18% higher than <i>Standard</i> at £3.33 per kilo and 57% higher than <i>Basic</i> at £2.50 per kilo.
Slaughter	Gas stunning

REFERENCES

- 1 RSPCA, 2011. RSPCA welfare standards for chickens, downloaded 23.02.2012 from <http://content.www.rspca.org.uk/cmsprd/Satellite?blobcol=urldata&blobheader=application%2Fpdf&blobkey=id&blobnocache=false&blobtable=MungoBlobs&blobwhere=123299942222&ssbinary=true>.
- 2 The Welfare of Farmed Animals (England) (Amendment) Regulations 2010 accessed 23/05/12 at <http://www.legislation.gov.uk/uksi/2010/3033/schedule/made> covers this measure for England. There is similar legislation in Scotland and Wales, though Northern Ireland permits 42kg/m² in line with the EU directive. The EU Directive generally permits 33kg/m², with a derogation to allow up to 39kg/m², if certain conditions including ventilation provision are provided for and another derogation up to 42kg/m², if additional measures including specified mortality targets are met.
- 3 COUNCIL DIRECTIVE 2007/43/EC of 28 June 2007 laying down minimum rules for the protection of chickens kept for meat production accessed 23/05/12 at <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2007:182:0019:0028:EN:PDF>
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- 6 Meat TradesNews Daily 29 February 2012 accessed 25/05/12 at http://www.meatradenewsdaily.co.uk/news/290212/uk___freedom_food_.aspx.
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Compassion in World Farming

River Court, Mill Lane, Godalming, Surrey, GU7 1EZ, UK.

Email: education@ciwf.org

Tel: +44 (0) 1483 521 950

Web: ciwf.org/gap

Registered Charity No 1095050.

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Langaller Farm

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