

January 20th, 2015

GFIA attendee

Dear Sir or Madam

Health and Welfare of broiler chicken

As a chicken farmer's son and a research scientist, I have a keen interest in health and wellbeing of farm livestock. I gave a paper to a Knowledge Transfer Network in the UK and an extract is: -

"At the Kent Farm Institute (1948) simple truths were learnt such as a) Time spent in watching animals is never wasted. b) Animals in your care rely on you. c) Look after your animals and they will look after you. d) Avoid sudden movements – make all changes gradual e) No breakfast 'til your animals have been fed. f) Most important: Keep an edge on your animals' appetites."

So as a farmer's son with a good knowledge and experience of caring for farm animals, I have always tried to enhance their behaviour, health and welfare. I have always found that if you do that, it improves their performance and productivity. The two go hand in hand.

My company has developed a more natural feeding system for broiler (meat) chicken, where existing feeding equipment feeds them several meals a day followed by a rest period, instead of the "normal" ad-lib feeding practice and only one rest period.

I commissioned an independent Veterinary report from a well respected Vet from the Veterinary Field Station of Bristol University (Dr Sue Haslam) on a farm where the experimental treatment was compared to ad-lib feeding. She specialised in disease and welfare assessment of broiler chicken and was a main contributor to now universally accepted welfare assessment methods. I attach a précis of her 22 page report which shows 26% lower mortality, better walking gait, cleaner birds, no Ascites or alarm behaviour and less culls and runts compared to ad-lib fed birds.

You will be aware of human obesity in western societies and this also applies to ad-lib fed broilers. A British medical doctor visited US research to reduce this and produced a Horizon documentary "[Eat, Fast and Live Longer](#)" extolling a 2/5 diet. Our system is similar but on a time reduced scale.

It is a **flock management** system that we call **FLOCKMAN**. It complies with all the Five Freedoms, developed in the UK by the Farm Animal Welfare Council the first of which is *Freedom from hunger and thirst*. In our system, birds have an edge on their appetite and when fed several times a day, rapidly fill their crops, which ad-lib birds don't. So when the feed pans are empty during their rest period, the birds are not hungry because they all have crops full of food. This is the natural way that wild birds eat! So there is NO WELFARE ISSUE.

I attach a summary of how our system works and a description of daily broilers routine fed our way.

Best Regards,



David Filmer for DAVID FILMER LIMITED

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Skype Address david.filmer5: **NEW Award winning website** www.flockman.com.

A brief description of how **FLOCKMAN** works

FLOCKMAN is a control system that is retrofitted into large commercial chicken houses. It interfaces with existing lighting and feeding systems and controls when these are activated and deactivated.

For the last 60 years commercially reared meat chicken (broilers) have been fed ad-lib with feed available to them at all times. This is not the way birds feed in nature as, over millions of years, they have developed crops which serve as storage organs and as the first part of their digestive system. Wild birds fill their crops rapidly so as to avoid predation. But when birds are fed ad-lib, the crops become vestigial and no longer functional, so an important part of the birds' digestive system is lost.

FLOCKMAN feeds the birds several times a day, integrated with the same number of dark periods. This restores the crop's function and results in higher digestibility of the feed components, and better feed efficiency, with less feed required for the same liveweight. Because of there being more digestible protein available, extra lean meat is laid down by the bird which increases the quantity of valuable breast meat in the carcass. Higher protein digestibility means that less protein (nitrogen) is excreted leading to dryer litter with less ammonia and other noxious pollutants. In addition, several rest periods during the day (the equivalent of the human power nap) has been found to improve the birds' immune defence system contributing to better health and less mortality. Whilst in the crop, lactobacillus proliferates which, by competitive exclusion, provides less space for harmful bacteria. The acid conditions also damage Salmonella and Campylobacter.

We know the chicks from different breeding stock perform differently, so our system gets feedback continually from the birds and feeds each individual flock of chicken according to its growth potential. It controls the quantity of feed fed to each flock according to this feedback and then disables the auger motors which fill up the feed pans. The feed pans then soon run out of feed and remain empty for 1-2 hours before the lights gradually dim down (that reduces stress on the birds). While the pans are empty, the birds still have feed in their crops so no welfare problems. However it prevents the greedy birds in the flock from overeating and becoming obese and like obese humans, obese birds are subject to heart attacks.

So there is a big reduction in heart attacks, which is beneficial to the welfare of the birds as well as the income of the broiler grower. The processing plant also benefits as obese birds deposit a lot of fat in their abdomen as well as their arteries. That fat is removed by the eviscerating equipment in the factory and discarded for human consumption. So the carcass yield is higher with **FLOCKMAN** fed birds. The extra breast meat as a proportion of the carcass is highly beneficial to the processor as this is the most highly valued.

Nine Field trials (2.2 million birds) have shown better welfare less mortality and payback in less than 6 months.

The daily cycle of broilers fed on the **FLOCKMAN** system

I have a great interest in animal behaviour and how we can beneficially influence it. One of the dictums that I learnt at Farm Institute was “*Time spent in watching animals is never wasted*”. I have literally spent many hours in chicken houses standing perfectly still and observing bird behaviour.

With our system there are four stimulating events per 24 hours. It starts with the birds in their rest period where they are in the dark and asleep. Then we activate our Dawn/Dusk Dimmer which gradually brings the lights on slowly to avoid stress and to simulate daybreak. Firstly the early risers begin to stir, stretch their legs and flap their wings. They then go to the drinkers to quench their thirst. Soon the drinker lines are full of birds. The dominant birds then go to the feed pans and eat rapidly. None of the other birds try to compete with them as they know their place in the dominance hierarchy!

Within 5-10 minutes the dominant birds have full crops and they leave the feed pans and sit down to rest. The next dominant birds then occupy the feed pans and all the other wait their turn because our system has taught them that if they do so, they will also get full crops. They only fight to get food if their experience is that food is in short supply.

So within an hour or so, every bird has had its turn, even those at the bottom end of the peck order. That contrasts with ad-lib feeding, where birds eat at random during the day: so when a recessive bird tries to eat, there is often a more dominant bird eating which chases the recessive bird away, which is continuously frustrated, underfed and underweight.

When the correct amount of food has been delivered, our system disables the feed pan augers so that no more food is delivered until the next feeding period. The remaining food in the pans soon runs out, which prevents the greedy birds from overeating, becoming obese and being subject to heart attacks and metabolic disorders such as Ascites.

Birds then turn their attention to scratching in the litter for food particles that may have been spilt, for dust bathing and exercise in general. This strengthens their legs and I provided Veterinary evidence that walking gait is significantly improved.

Within an hour or two, the birds are ready for their next “powernap” and, even before the lights gradually start to dim down to zero (simulating dusk), the birds’ internal time clocks anticipate the event and they start to settle down in small groups. When the lights are fully out, sleep (very important for the immune defence system) takes over and the cycle is complete.

There are 4 cycles or mini-days per 24 hours, which contrasts to 18 hours of continuous light with ad-lib feeding, during which there are no really stimulating events; bird become listless and do not exercise their legs as much as with our very different system. I think that this must be a very uninteresting and boring lifestyle.

If you or any of your colleagues ever have the opportunity (and the time!) to witness what I have described, I think that no one could fail to be impressed by the very different and interesting lifestyle that broilers have during their short life, with our unique and revolutionary new system.

A précis of the 22 page report by **Dr Sue M Haslam BVSc PhD DWEL MRCVS** comparing birds fed using **FLOCKMAN** compared to control birds fed ad-lib.

- 1) Mortality including culls was over 26% lower in the experimental than in the control house.
- 2) The sample of birds assessed for walking ability was 0.89% of birds placed in the house and has been shown to be sufficient to reflect levels of walking ability in a house, to the 95% confidence level (Kestin and Knowles 2004). The walking ability of birds in the experimental house was markedly better than that of birds in the control house, with average bird gait score 0.19 lower in the control house. In addition, there were over 4 times (4.25) the percentage of birds sampled with a gait score of over 2 in the control house than in the experimental house. Note perfect gait scores 0 while a bird which is unable to walk on its legs scores 5. Lameness was weighted as the second most important welfare assessment measure in the UWI (0.24) (Haslam and Kestin 2004). Lameness affects the welfare of the bird in many aspects and is relevant to each of the Five Freedoms, developed in the UK by the Farm Animal Welfare Council. Thus, birds with poor walking ability are more likely to suffer from hunger or thirst if they are unable to access feeders and drinkers (Weeks 2000) and to be in discomfort: they are also unable to perform many normal behaviours, including walking and running. In addition many lame birds are likely to be suffering from pain, injury and/or disease. Poor walking ability severely reduces the welfare state of birds, as it affects bird welfare in terms of most of the Five Freedoms, developed by the UK Farm Animal Welfare Council, which are widely used in welfare assessment.
- 3) The birds in the experimental house were considerably cleaner than birds in the control house (mean cleanliness score 3.27 and 3.00 respectively), in spite of similar litter scores. This probably reflected the increased mobility in the experimental house and resultant reduced lying time when contamination of the breast area occurs. Birds also had a lower prevalence of Hock Burn than those in the control house.
- 4) During the visit one hundred birds were examined for clinical pathology: 7% of the birds examined in the control house had Ascites while no birds were found with this condition in the experimental house.
- 5) Birds in the control house showed episodes of 'alarm' behaviour, consisting of considerable flapping and vigorous escape attempts, as the house was walked, in contrast to the birds in the experimental house in which no alarm responses were seen.
- 6) Total culls in the experimental house were 2.09%: in the control house it was 2.45%.
- 7) There were 1.16% small/emaciated birds ('runts') in the experimental house compared to 1.53%: in the control house. Note that runts are rejected in the processing plant.
- 8) Three hundred and thirty four birds were gait scored in the control house and 254 in the experimental house. The mean gait score was 1.69 control house and 1.50 in the experimental house. The percentage of sampled birds with gait score of over 3 was 10.2% in the control house and 2.4% in the experimental house. Note perfect gait scores 0 while a bird which is unable to walk on its legs scores 5.
- 9) The increased mobility of birds in the experimental house is also reflected by the considerably greater mean avoidance distance test in this house in comparison to that in the control house (45.43 and 3.14 cm respectively).

Links to papers

[http://www.flockman.com/Knowledge%20Transfer\(3\).pdf](http://www.flockman.com/Knowledge%20Transfer(3).pdf)

http://www.flockman.com/WPSA2011_0020.pdf

[http://www.flockman.com/6\).%20Susan%20Haslam's%20FLOCKMAN%20Report.pdf](http://www.flockman.com/6).%20Susan%20Haslam's%20FLOCKMAN%20Report.pdf)