FLOCKMAN

The effect of fully functional crops and feed intake control on growth, feed efficiency, mortality and profitability of broilers housed in large, modern, climate controlled houses

Study chicken ancestor - Indian Jungle Fowl Then learn and apply to modern Broilers

Industry changes in the late 1950's

Large numbers of birds kept in intensive houses with no access to pasture including seeds, grains, grit, etc.

Mechanisation of feeding systems

Tube & Chain Feeders, Cable and Flight, now Feed Pans.

Feed started to be fed ad-lib (new system).

All feed components (including cereals) were ground.

23 hours of light/day common. So poor immune defence.

So, no full crops and inactive gizzards. Poorer digestion.

Forbes (2003) showed that feed soaked in water to a porridge-like consistency and fed to broilers, gave substantial improvements in liveweight and feed efficiency compared to controls fed equal dry matter. But feeding soaked feed proved commercially impractical. Dissection of crops of broiler chicken fed regular meals a day instead of ad-lib feeding showed that they had porridge like contents. A theory was developed that meal time feeding could lead to similar benefits as found by Forbes

Material and methods Nine pairs of broiler houses containing minimum 25,000 birds fed on standard commercial feeds were used. Farms 1 and 3 had 2 houses over 2 crops, Farm 2 had 2 houses over 1 crop and Farm 4 had 4 houses over 2 crops. Each house within a pair was the same regarding equipment, management, breed, sex, stocking density and date of housing. Special control equipment interfaced existing feeding and lighting equipment in one house within each pair. Live weight, feed consumed, mortality parameters and value of factory weight and cost of feed used were recorded. Statistical analysis of the average performance difference between the new system and the control house within a pair was performed using the t-test. Financial parameters were analysed in the same way.

Results Birds on the new system had significantly less mortality, faster growth and better feed efficiency as measured by both Feed Conversion Ratio and European Performance Efficiency Factor (Table 1). Margin of bird value minus feed cost was significantly higher on the new system. Birds on the new system were visually cleaner and more active but no statistics are available.

Table 1 Effects of the new system on performance

					95% confidence limits	
Parameter	New System	Control	Benefit	p value	Lower	Higher
Mortality	3.27%	4.28%	1.01%	0.0053	0.50%	1.52%
Liveweight	2057 g	2003 g	55 g	0.0010	30 g	80 g
FCR	1.642	1.696	0.053	0.00028	0.033	0.073
EPEF	331.9	311.4	20.5	0.00006	14.3	26.6
Margin/bird	confidential	confidential	3.79 p	0.0020	2.59p	4.98
Margin/house	confidential	confidential	£1,083	0.00002	£798	£1,368

Equipment developed to control feed intake and integrated lighting programmes.

Conclusions Results show that the new system significantly improved bird performance and profitability. Confidence limits show a 97.5% probability that the new system improved mortality by a minimum of 0.5% and FCR by a minimum of 0.033. Extra margin over feed cost increased by a minimum of £798 per house of 25,000 birds per crop. With 6-7 crops of broilers per year, this represents a satisfactory return on capital. Less feed intake also lowers scarce water and energy use and the carbon footprint of the meat produced. Subsequent to the above trial, feedback from farmers and the chicken was needed to improve and fine-tune the system to cater for different stocking densities and methods of production involving several enhancements to the software. This involved more observations of bird behaviour in the chicken house when subject to various imposed feed control strategies.

Practical application A major UK broiler integrator has done its own separate verification trials and has produced results similar to those reported. In addition, an integrator in Thailand has also reported similar results although they used curtained open sided houses and the feed contained no whole cereal. In January of this year an agreement was reached with another company to handle the marketing and sales of the new equipment in the UK and world-wide. This has resulted in equipment being installed in South Africa on a large site of 150 metre long houses incorporating 50,000 birds per house. There is also interest from Australia, Brazil and China. To date, 175 systems have been manufactured in the UK. For more information, see our Award winning Website at www.flockman.com