

Labour Saving Hygienic Broiler Housing

Researchers in Japan have developed moving plastic mesh belt floors for growing broilers in cages on the floor. — By Professor Jun-ichi Okumura

In modern broiler housing, feeding and watering systems have been fully automated but growers still have to go into the house to collect any culls or dead birds. A new system developed by Dr. M. Hosoya in Japan, has successfully overcome this problem: dead birds are carried out of the house by means of a slow moving mesh belt floor. Broilers were reared from day-old to market weight on the mesh belt without any evidence of breast blisters or infected feather follicles. The grow-out performance was good and the number of bacteria contaminating feathers and skin was drastically reduced.

The mesh belt provides excellent firm support for the

birds' feet and it is designed in such a way that there is no build-up of manure on the belt surface. When a stethoscope was used to examine and compare birds reared in this new system with those on conventional litter floors, the difference was clear. Birds reared on litter had evidence of respiratory infection with some noise from their lungs whereas birds on the mesh floors had none. The clean belt promotes clean feet resulting in healthy footpads and no leg problems from footpad dermatitis. (See photos 1-7).

In addition to fitting the mesh belts in cages, the system has also been applied to floor housing (pics 9-10). The mesh belts (9cm x 2m x 3mm) were installed 80cm above the concrete floor and were moved slowly (1cm/sec) and intermittently (every 20 minutes). The belts allowed the manure to pass through and away from the birds, thus creating a healthy environment for the birds and automatically removing the manure from the 17m x 7m houses. It also carried out any dead birds. This system also eliminated the risk of people carrying pathogens into the house resulting in much less incidence of airborne disease. The system also requires less labour. Again, the performance results were good and the numbers of bacteria recovered from the feathers and skin was much less than in broilers reared on conventional litter floors. (See Table 1).

Table 1: Average number of bacteria detected from per gram of feathers by new and floor system

	Standard plate count	Coliform group	Stapylococcus aureus
Feather			
New system	10 7.2 +/- 0.6	10 3.2 +/- 0.8	10 3.2 +/- 0.3
Floor system	10 10.2 +/- 0.5	10 5.2 +/- 1.5	10 9.0 +/- 0.1
(n=3)			

Trials with the New System

Nine hundred (450 male and 450 female) Chunky broiler chicks were reared from day old to 56 days old from June 4th to July 31st 1999. They were fed

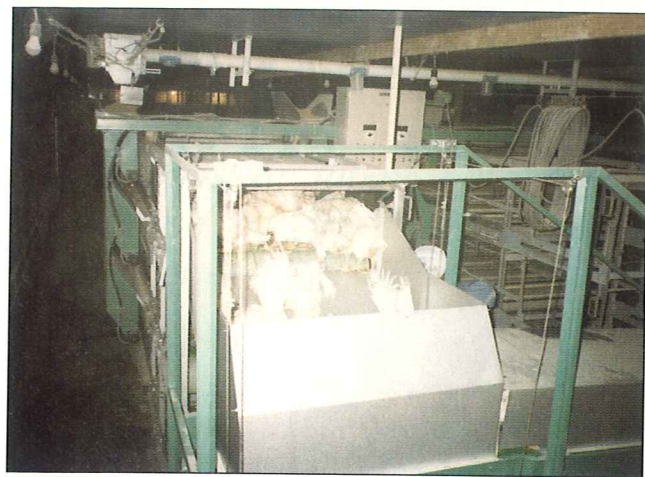


Introduction of day old chicks onto the moving belt.



Interior view of the broiler house.

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Collection of broilers for marketing by moving the belt.



Transferring broilers into transport coops.

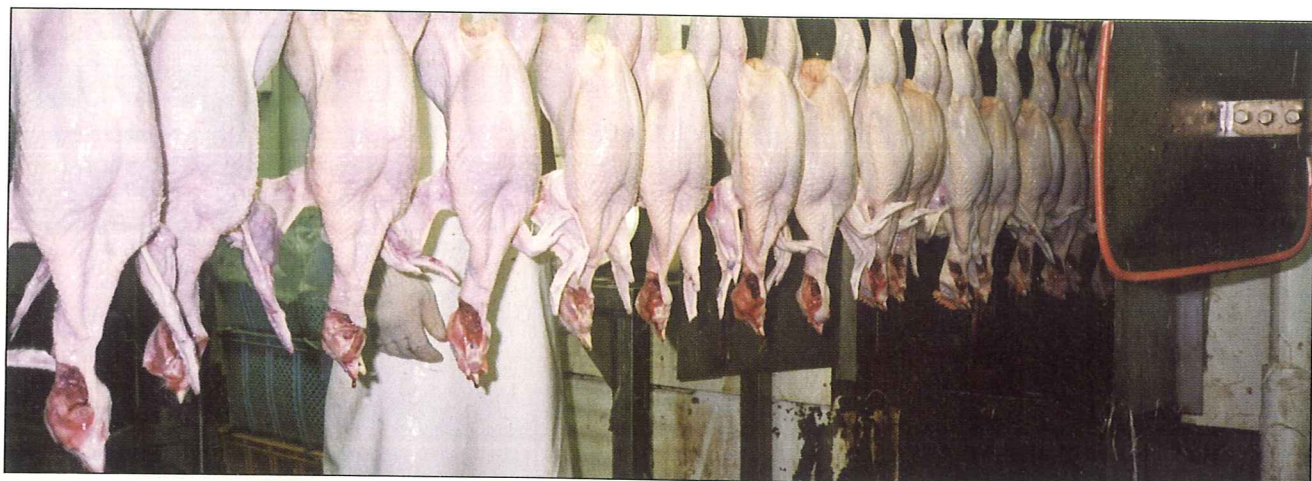
commercial broiler diets, 23.0% CP and 3000kcal ME/kg from day old to 10 days old and 18.0% CP and 3150 kcal ME/kg from 11 to 56 days old. Feeders and water points were supplied per 43 and 14 birds each, respectively. Population density was 16.6 birds/m². Lighting programme was 23 hours per day and the intensity was 20, 10 and 20 lux from day old to 15 days old, 11 to 42 days old and 43 to 56 days old, respectively.

Temperature in the house was controlled from day old to 10 days old by warm air and thereafter depended on natural ventilation. From day old to marketing time, they were kept on the net belt floors (9m x 2m x 3mm), which were installed above 80 cm from the concrete floor. The belt was moved from 6 days old, slowly (8cm/8sec) and intermittently (every 20 minutes). The belt system allowed not only the manure to pass through and away from the bird and offered healthy air

conditions for the bird by automatically eliminating manure from the house (17 x 7m), but also successfully carried the dead birds from the house. At the time of marketing the net belt was moved quickly to collect birds in accord with the collectors conditions. Numbers of bacteria contaminating the feathers and skin at age of 54 days was investigated according to standard procedures.

Average performance at 56 days old were: body weight 3064g, livability 95.3%, feed conversion ratio 2.28, downgrades grade 1.28%. There was no incidence of breast blisters and infected feather follicles as well as no incidence of haemorrhages in muscle, broken legs and wounded skin during collecting birds for marketing. Details of liveability are 39 dead birds, because of accidents (6), heat stress (5) and others (28), and 5 culled birds, because of leg weakness (4) and too small (1).

Average number of bacteria detected from per g of



Carcass shows no incidence of breast blisters and infected feather follicles.



No leg problems from footpads dermatitis.

feathers and skin were investigated from randomly selected 3 birds and 10^{7.2} and 10^{5.8} of standard plate count bacteria, 10^{8.2} and 10^{2.0} of coliform group, and 10^{8.8} and 10^{3.8}, respectively. These numbers of bacteria were far less than those found in the broilers kept on the floor. Earlier research had reported that the number of bacteria detected from per g of feathers and skin of broilers kept on the floor were 10^{10.2} and 10^{5.9} of standard plate count bacteria, 10^{5.2} and 10^{4.4} of coliform group, and 10^{9.0} and 10^{4.1}, respectively.



View of the mesh belt in a floor housing system.

From this experiment we have concluded that this system conserves energy is clean and healthy. However, we cannot tell precisely about productivity because the experiment was done under high population density and high room temperature conditions. — Professor Jun-ichi Okumura, Nagoya University, Japan. List of references are available from the author. **PI**

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Phone: +34 976 694530
Fax: +34 976 690968
Poligono Industrial Rio Gallego
Calle D, Parcela 10
50840 Zaragoza, Spain
E-mail: exafan@exafan.com

Website: www.exafan.com

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