

## New Housing Systems for Laying Hens

Historically, conditions in Swiss battery houses were often characterized by low-intensity artificial lighting and high concentrations of dust and harmful gases.

Extensive studies on the behaviour and health of laying hens kept in battery cages, sloping-mesh houses and floor and free-range systems were undertaken between 1972 and 1975 in Switzerland. The results from these studies showed that despite intensive selective breeding, modern hybrid layers behave essentially the same as their wild ancestors. Secondly, it became apparent that cages and sloping mesh systems impose restrictions on the inherited behaviour of the hens and led to behavioural abnormalities and impaired health.

In light of these results, efforts were made to develop new systems of housing which conformed both to the needs of the hens and to economic requirements.

Table 3: Requirements made of new housing systems.

<i>Consumers</i>	<i>Poultry Keepers</i>	<i>Birds</i>
<i>High Egg Quality</i>	<i>Daylight</i>	<i>Feeders and Drinkers</i>
<i>Acceptable Product</i>	<i>Low dust and harmful gas concentrations</i>	<i>Daylight and its natural rhythm</i>
<i>Price</i>	<i>User-Friendly installations with clear layout</i>	<i>Social Life</i>
	<i>Very high level of mechanization</i>	<i>Three-dimensional system with perches, elevated tiers, scratching areas and littered nest boxes.</i>

The first aviary-type house for 50 hens was built and tested in 1979. As early as 1983, a Swiss firm was marketing an aviary system with prefabricated wood and metal parts and an automatic system for the removal of droppings. The aviary concept has now gained acceptance in Switzerland, as an alternative to battery housing, which is acceptable from both an economic and welfare standpoint.

Today, keepers of laying hens in Switzerland have a wide range of 14 different housing systems to choose from.

A common feature of all these systems is that they provide perches, a scratching area, nest boxes and other furnishings and structures which enable the birds to exhibit natural behaviour. They also make use of the birds' natural ability to fly by providing elevated terraces and perches. The division of the house into nesting, littered, feeding, drinking and resting zones has contributed to the better results seen in aviary housing compared with colony cage or slope-mesh systems.

The construction and operation of the new housing systems demands an extensive knowledge of fowl biology and behaviour. Attention must be given to a whole range of important points: rearing; social structure; lighting; feeding and drinking facilities and perches; nest boxes; floors; litter and removal of droppings; stocking densities.

The birds must already be prepared for the new system during the rearing phase. For example, chickens from battery or floor rearing systems without elevated perches are initially

unable to take advantage of an aviary system since they are incapable of flying up to elevated places.

A rearing house must provide a sufficient number of perches at various heights. Rearing houses must also be lit by natural daylight, with shutters or blinds allowing the length of the day to be controlled.

In aviary houses, subgroups of 4 to 6 birds form within the flock. These occupy a base area from which they sometimes move a considerable distance in order to feed and lay. The base area of individual subgroups may overlap, and are also used by other groups at different times.

The formation of groups enables the chickens to organize socially and to build up a stable social structure. Group formation is encouraged by appropriate structuring and installations within the house and by keeping stocking densities down to around 10 birds/sq.m. or 3 birds/cu.m.

## **Lighting**

### ***Poultry houses must be lit with daylight.***

Daylight stimulates the metabolism, plays a part in the formation of red and white blood cells and Vitamin D, and influences growth and reproduction via hormones. In both cocks and hens, comb size and colour are influenced by the quality and intensity of light as well as by the ambient temperature and the strain of the fowl. Chickens that are allowed outside have smaller, firmer and redder combs than those kept continuously indoors without daylight. Daylight also influences the behaviour of the chickens: it is capable of triggering certain behavioural activities such as preening and sunbathing, and also controls the annual and diurnal behaviour cycles.

At no time should direct sunlight penetrate into the nest boxes since the birds will go there to scratch and peck, disturbing laying hens and crushing eggs. The resting areas for the birds should also be in the darker part of the house.

## **Feeders, Drinkers and Perches**

Feeders, drinkers and perches should always be located on grids above the droppings pit or belt. Since chickens spend a large part of the day feeding, and rest on the perches both day and night, most of their droppings fall into the pit or onto the belt where the birds cannot come into contact with them.

Frequent feeding - up to eight times per day - has proved advantageous since this helps to keep the bird occupied. Care must be taken not to mount the feeders too high since the birds will be unable to reach them easily and will destroy their neck feathers.

Cup drinkers give good results mainly because they reduce water losses.

Perches which allow chickens to rest and get away from other birds should always be located in an elevated position. Perches of wood, plastic and metal have been used. However, judging by the frequency of lesions to the balls of the foot, both the material and the form of the perches leave room for improvement. A form of perch must be developed which takes the load off the balls of the feet.

## **Nest Boxes**

In order to avoid floor, dirty or damaged eggs, the nest boxes must conform to the needs of the hens and must be provided in adequate numbers.

An inadequate supply of nesting space results in a crush of birds in front of the nesting boxes and a high proportion of floor eggs. The minimum requirement of five hens per nest as recommended by the Animal Protection Order has been proven to be inadequate. Rather better results are achieved by allowing for 2 to 3 hens per individual nest.

Nest boxes must be constructed so that hens seeking a nesting site can easily see into them. This makes it unnecessary for them to repeatedly enter the boxes.

### **Flooring, Litter and Removal of Droppings**

It is essential to ensure a high quality surface for laying hens. Wire of adequate thickness must be used for mesh floors. Litter is of value to the birds for pecking, scratching and dustbathing. Litter provides insulation from the cold of the floor and creates a suitable microclimate.

All modern aviary systems are provided with an automatic system for regular, easy removal of droppings. This allows an effective reduction of the atmospheric dust content as well as the noxious gases inside the housing.

### **Stocking Densities**

It is economical to make maximum use of the available volume within the building. Excessive stocking densities impair hen well-being, optimum climactic conditions and flock management.

Although Swiss animal welfare legislation states that no more than 12.5 birds may be housed per sq .m. of mesh surface and no more than 3.5 birds per sq. m. of litter, a more appropriate stocking density would be 10 birds per sq. m. of floor area. The distance between the two levels in an aviary must be at least 50 cm. so that all birds are able to stand.