



**EGG PRODUCTION SYSTEMS
- AN ASSESSMENT**

September 1986

THE FARM ANIMAL WELFARE COUNCIL, GOVERNMENT BUILDING
HOOK RISE SOUTH, TOLWORTH, SURBITON, SURREY KT6 7M

ASSESSMENT OF EGG PRODUCTION SYSTEMS

PREFACE

The Farm Animal Welfare Council has considered each of the systems of housing egg-laying hens now thought to be used or which are being developed in this country. This paper describes the main systems in use; it gives an assessment of the principle advantages and disadvantages of each, in welfare and commercial terms; and it concludes with our welfare judgement. When categorising systems it has to be accepted that the characteristics of one system may merge with those of another without clear demarcation. We have sought to compare each of these systems on the basis of average standards of care, husbandry and equipment typically found in each, rather than contrasting the best features of one with the worst of another. It is important to note that as systems become less intensive, the need for a high standard of stockmanship becomes all the greater. The risk of disease also increases in less intensive systems and unless adequate precautions are taken the health of the birds will be adversely affected.

In commenting on the various systems, the Council's guiding principles - its welfare criteria - have been that all farm animals should be provided with:

- a. freedom from thirst, hunger or malnutrition;
- b. appropriate comfort and shelter;
- c. prevention or rapid diagnosis and treatment, of vice, injury, parasitic infestation and disease;
- d. freedom to display most natural patterns of behaviour.

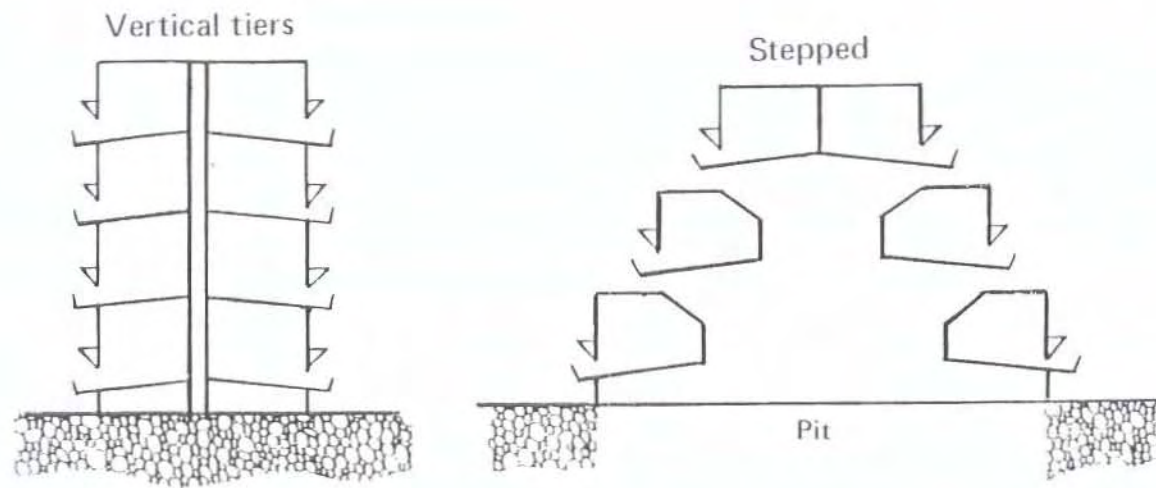
The Council considers that the most widely-used systems currently in use have developed primarily for commercial reasons and believes that some developments do not meet all the reasonable welfare requirements. We indicate in this paper, systems which we believe are capable of providing reasonable levels of production whilst meeting our welfare criteria. Different stocks and different rearing practices may influence the way birds behave and perform under different systems. It is important, in all systems to ensure that the Government's Codes of Recommendations are followed.

Footnote:

Natural - may be taken to mean how the bird would behave in the free living state.

Farm Animal Welfare Council
Government Buildings
Block B
Hook Rise South
Tolworth
SURBITON, Surrey KT6 7NF

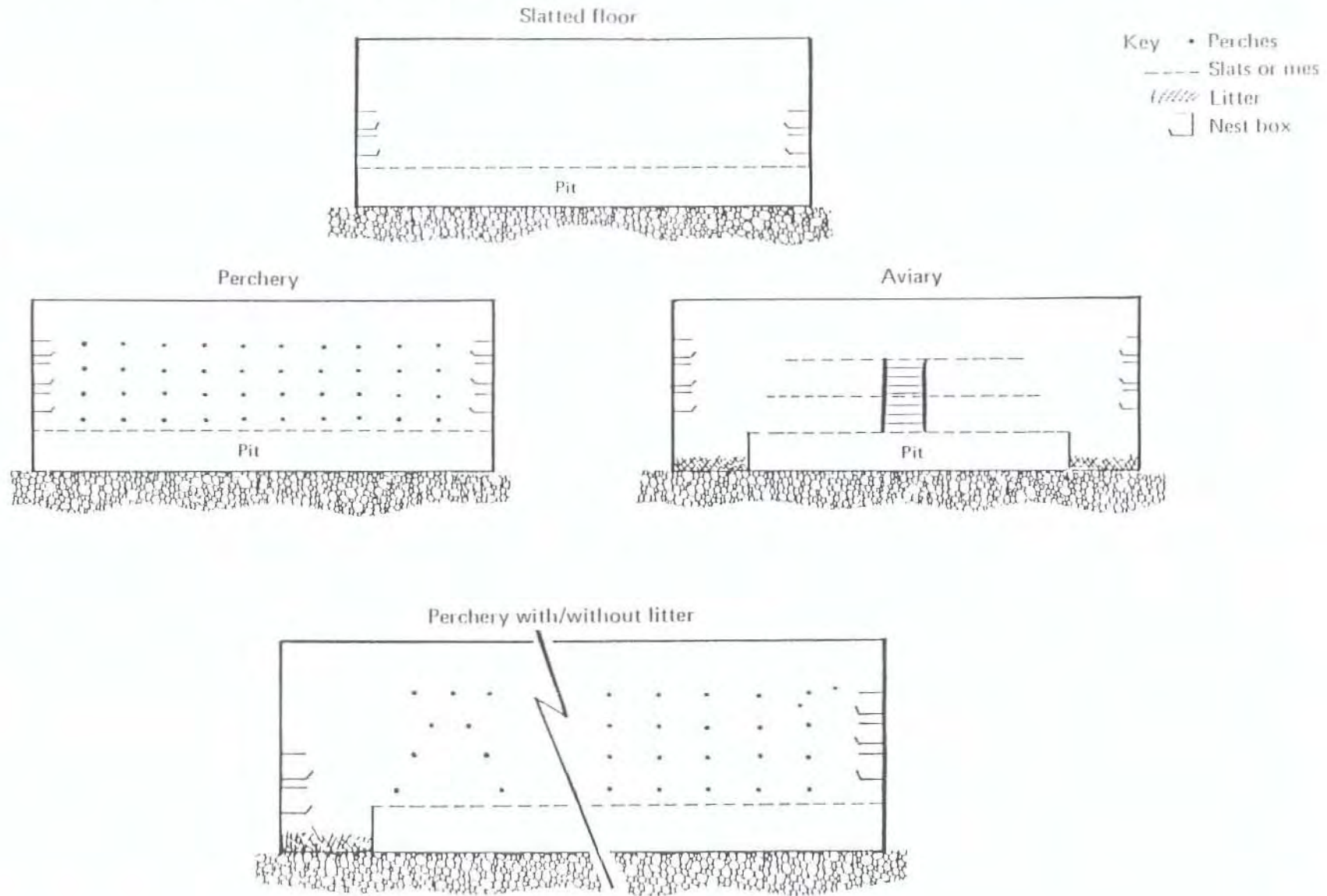
1. Cages



THE SYSTEMS: 1. Cages

Description	Pros and Cons		Welfare Assessment
	Welfare	Commercial	
<p>Typically a cage laying system consists of a series or battery (hence the term 'laying battery') of cages each designed to hold one or normally a greater number of birds. These are usually in an insulated building in which ventilation, temperature and light are controlled. The cages have sloping mesh floors so that the eggs, when laid, roll forward out of reach of the birds to await collection. Droppings pass through the mesh floors on to boards, belts, the floor of the house or into a pit to await removal. feed is supplied in troughs fitted to the cage fronts and automatic water supply is provided.</p> <p>The great majority of commercial egg laying birds in the UK are housed under this system.</p> <p><u>Types</u></p> <p>From flat deck (single tier) multi-tiers up to 6 or more high in vertical, stepped or semi-stepped configurations.</p> <p>Although density of stocking is commonly between 400 and 500 cm² per bird, it varies from under 400 cm² to more than 800 cm².</p> <p>It is suggested that the term 'Colony Cage' is reserved for cages designed to contain 8 or more birds. Although uncommon various types do exist. Stocking densities are similar to those for ordinary cages, but more space tends to be provided for breeding stock.</p>	<p><u>Pros:</u></p> <ol style="list-style-type: none"> 1. Easy to control environment. 2. No exposure to risk of predation. 3. No exposure to extreme climatic conditions. 4. Small colony size. 5. Birds separated from droppings - disease control. <p><u>Cons:</u></p> <ol style="list-style-type: none"> 1. No nesting facilities. 2. Ability to flap wings is prevented and the range of other exercise is limited. 3. No opportunity to dust bathe. 4. Cannot escape other birds. 5. Cage structure may give rise to feather and foot damage. 6. Confinement on a sloping floor 7. Cannot influence overgrowth of claws unless an abrasive strip is present. 8. Environment is physically barren. 	<p><u>Pros:</u></p> <ol style="list-style-type: none"> 1. Ease of mechanisation, management and environmental control contribute to feed and labour efficiency. 2. Overall cost of production lower than for other systems. 3. Clean eggs produced. 	<p>We do not approve of the cage systems in their present commercial form on welfare grounds. Although it meets some of our welfare criteria the extreme confinement denies or seriously restricts the birds freedom to express patterns of behaviour. The birds may be subject to chronic discomfort. It is possible that other forms of cages under development but not yet in commercial use might meet more of our criteria.</p>

2. Wire or slatted floor houses with or without litter



THE SYSTEMS: 2. Wire or slatted floor houses with or without litter

Description	Pros and Cons		Welfare Assessment
	Welfare	Commercial	
<p>The multi-tiered slatted or wire floored system, without any area of litter on the floor, is based on former, unsuccessful, single level wire or slatted floor systems.</p> <p>The multi-tiered slatted or wire floored system with an area of litter on the floor is based on the deep-litter system.</p> <p>Both these developments depend on the exploitation of vertical space (as can be achieved with tiered cages) while allowing birds to live as a flock. The main features are slatted and/or wire-mesh tiers and/or perches at more than one level with feed, water and nesting accommodation available at more than one level. These are known as aviaries or percheries. The accommodation is usually an insulated building in which light, temperature and ventilation are controlled.</p> <p>Nest boxes are necessary. Stocking densities range typically between about 400 and 800 cm² per bird on an occupied ground floor area basis.</p> <p>While in use commercially the systems are mainly still at the experimental and development stages.</p> <p><u>Types</u></p> <p>Many configurations are possible. Although in some versions a litter area is provided, the amount in relation to the number of birds is appreciably less than in the deep litter system (qv).</p> <p>Providing that stocking density does not exceed 25 birds/m² with at least 15 cm perch space per bird, under the EEC Egg Marketing Regulations, eggs from these systems may be termed 'Perchery eggs (barn eggs)'.</p>	<p><u>Pros:</u></p> <ol style="list-style-type: none"> 1. Ease of environmental control avoids exposure to climatic extremes. 2. No exposure to predators. 3. Freedom to move within the house area. 4. Opportunity to stretch wings to full extent and to exercise in a variety of other ways. 5. Opportunity to use nest boxes. 6. Where litter is available dust bathing is possible. <p><u>Cons:</u></p> <ol style="list-style-type: none"> 1. Large colony size increases risk of social disharmony. 2. If bullying, feather pecking or cannibalism occur, control may be difficult. 3. Structures provided for the birds impede observation and inspection. 4. Unless manure belts are provided between tiers birds will get soiled from the droppings of birds above. 5. Where litter is available access to droppings may increase the risk of disease. 6. Ammonia gas concentrations may be troublesome. 7. Dust levels may be higher where litter is provided. 	<p><u>Pros:</u></p> <ol style="list-style-type: none"> 1. By using vertical space to achieve higher stocking densities the capital cost per bird begins to approach comparability with the cage system. 2. At higher stocking densities environmental control can maintain optimum temperature and hence contribute to feed efficiency. 3. Eggs can command a premium. <p><u>Cons:</u></p> <ol style="list-style-type: none"> 1. Husbandry and management are more demanding than in the cage system. 2. The structures provided for the birds make routine tasks and cleaning more difficult. 3. Production costs tend to be higher than for cages, although development work in progress suggests that the difference can be reduced. 4. Dirty eggs tend to be a problem. 	<p>We prefer systems where litter is provided as long as there is sufficient litter area available to enable all birds to make use of it. We consider that the maximum stocking density of 25 birds per m² (on an occupied ground-floor area basis) included in the EEC Egg Marketing Regulations is too high. We believe that stocking should not exceed 16 birds per m².</p>

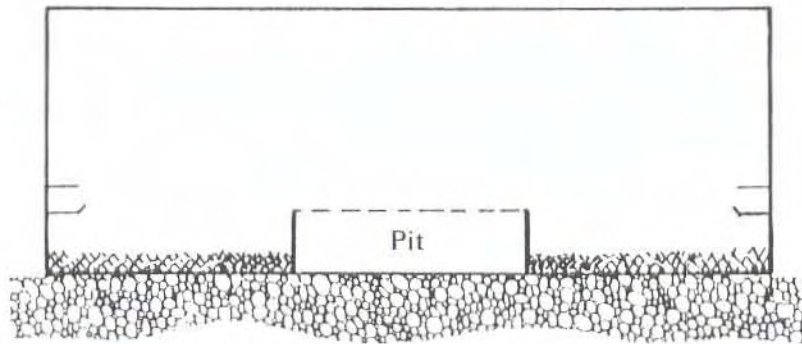
Key

----- Slats or mesh

////// Litter

☐ Nest box

3. Deep litter pens

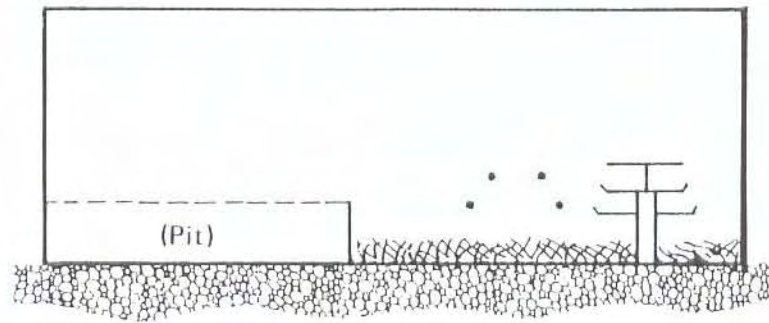


THE SYSTEMS: 3. Deep litter pens

Description	Pros and Cons		Welfare Assessment
	Welfare	Commercial	
<p>A flock system in which the stock is confined in a building with access to an area littered with material such as wood shavings, straw, peat moss, etc.</p> <p><u>Types</u></p> <p>The main variable is the proportion of space that may be occupied by a platform with enclosed droppings collection area. The range is from no platform at all (when movable perches may be used) up to about 80 per cent platform and only 20 per cent litter. A common arrangement is 50 per cent platform.</p> <p>The EEC Egg Marketing Regulations require that maximum stocking density is not greater than 7 hens per square metre and that at least one third of the floor area must be covered with litter if eggs from the system qualify to be called 'deep litter' eggs.</p>	<p><u>Pros:</u></p> <ol style="list-style-type: none"> 1. Varied physical environment including litter making dust bathing possible. 2. No exposure to predators. 3. Freedom to move within the house area. 4. Opportunity to stretch wings to full extent and to exercise in a variety of different ways 5. Opportun. to use nest boxes. 6. Birds easier to inspect than in tiered systems. <p><u>Cons:</u></p> <ol style="list-style-type: none"> 1. Stocking density insufficient to achieve optimum environmental control throughout the year. 2. Large colony size increases risk of social disharmony. 3. If bullying, feather pecking or cannibalism occur control may be more difficult. 4. Access to droppings in the litter increases risk of enteric diseases. 5. Ammonia gas concentrations may be troublesome. 6. Dust may cause difficulties. 	<p><u>Pros:</u></p> <ol style="list-style-type: none"> 1. Eggs can command a premium. <p><u>Cons:</u></p> <ol style="list-style-type: none"> 1. Requires greater capital investment per bird than in cages because of the housing space requirement. 2. Food consumption tends to be greater than in cages. 3. Dirty eggs can tend to be a problem. 	<p>In general we approve this system. Subject to the provision of a minimum perforated platform area, this system falls within the definition for deep litter eggs under the EEC Egg Marketing Regulations but a greater space provision would be needed to meet the UK Welfare Code of Practice.</p> <p><i>17 kg/m² no more than 7/</i></p>

- Key
- Perches
 - Slats or mesh
 - ##### Litter
 - ┌ Nest box

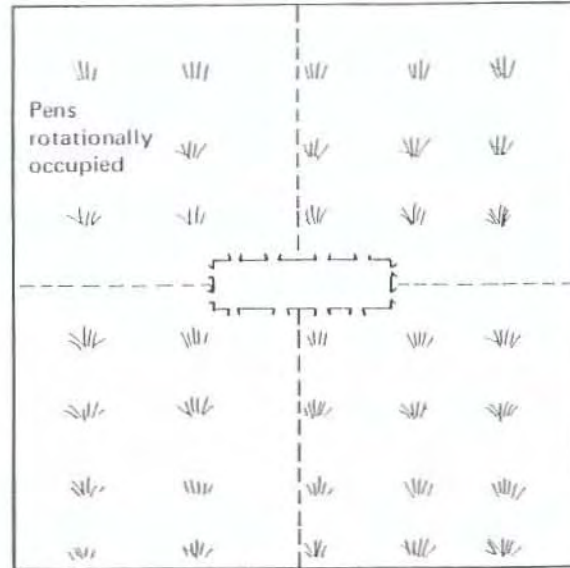
4. Covered yard



THE SYSTEMS: 4. Covered yards

Description	Pros and Cons		Welfare Assessment
	Welfare	Commercial	
<p>Covered yard accommodation comprises a fully covered area. A liberal use of straw or other suitable litter is a fundamental feature necessary to ensure acceptable conditions for the stock. Slatted roosting platforms and/or perches are normally provided.</p> <p><u>Types</u></p> <p>Often makes use of existing farm buildings and may use adjustable screens to give protection in bad weather where there is no solid wall. Traditionally space allowances are fairly generous (eg 2500 cm²/bird).</p> <p>The system comes within the EEC Egg Marketing Regulations labelling criteria for deep-litter eggs provided that there is sufficient area for the collection of droppings: that maximum stocking density does not exceed 7 hens/m² and that at least one third of the floor area is littered.</p>	<p><u>Pros:</u></p> <ol style="list-style-type: none"> 1. Varied physical environment including litter makes dust bathing possible. 2. Freedom to move within the house area. 3. Opportunity to stretch wings to full extent and to exercise in a variety of different ways. 4. Opportunity to use nest boxes and achieve privacy when laying. 5. Protection from predators. 6. Protection from the worst effects of weather. <p><u>Cons:</u></p> <ol style="list-style-type: none"> 1. Little control over environmental conditions (apart from exclusion of rain etc and worst effects of wind). 2. Large colony size increases risk of social disharmony. 3. If bullying, feather pecking or cannibalism occur control may be more difficult. 4. Access to droppings in the litter increases risk of enteric diseases. 5. Some risk of disease brought in by wild birds unless suitable protection is used. 	<p><u>Pros:</u></p> <ol style="list-style-type: none"> 1. Eggs may command a premium. <p><u>Cons:</u></p> <ol style="list-style-type: none"> 1. Requires periodic addition of new litter. 2. Feed consumption increased due to lack of environmental control. 3. Overall demands on husbandry, management and labour are greater than for the cage system but less than for free range. 4. Dirty eggs may be a problem. 5. Production costs higher than for cage and perchery systems. 	<p>This system meets most welfare crit and we approve it provided the spac requirements contained in the Welfa Codes are met.</p> <p><i>10 kg/m²</i> <i>3 birds</i></p>

5A Semi-intensive



5B Free range

