



## Experiences with small group sized furnished cages in Sweden

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The commercial use of furnished cages, including nest, perch and litter area at 750 cm<sup>2</sup>/hen cage floor space (including litter and nest area), started in May 1998 in Sweden. Within three years time four different manufacturers entered the compulsory New Technique Testing Program with their different models of such cages. Three of them (Victorsson, Hellmann and Triotec) were based on the general concept of the EMC (Edinburgh Modified Cage) but with 8 birds/cage, i.e. with the nest at the far end side of the cage with the litter box on top of the nest and one with the nest, litter and egg collection belt in the rear back of two adjacent cages (Big Dutchman – Aviplus) with 10 birds/cage. The former models had manual or half mechanical litter filling of saw dust or wood shavings while the Aviplus had automatic litter distribution by a belt. Litter areas opened 8 hours after onset of lay and nests were open during 24 hours.

In brief the testing procedure on the farms was a mixture between scientists in charge visiting the farms twice a year at 35 weeks of age and 55-65 weeks of age to carry out scoring of the integument and health and compulsory reports carried out by the farmers during the complete cycle on weekly mortalities and use of facilities (every 8:th week) from the farmers. Each farmer got reimbursement from the Swedish Board of Agriculture to cover costs of registration and work at the farm visits. In general conventional feeds were used and non beak trimmed mainly white hybrids. Beak trimming is *not* allowed in Sweden, Norway and Finland and the maximum group size allowed is 16 birds in Sweden. Results cover the period of 16-70-80 weeks of age. A total of 435,769 birds in 32 houses and 53 flocks spread over Sweden were included in the testing program from 1998-2002.

Today the proportion of birds housed in furnished cages in Sweden is about 30% or about 2 million birds. Many of the initial results the first years originate from early stages of commercial production in these systems developed during several years of studies in research. Hence, during the follow up the systems sometimes were modified in details of construction, e.g. as regards litter box opening/closing devices, nest or perch designs, etc.

The systems differed in their practical function e.g. providing different levels of mortality and operational function as regards litter filling, nest design and hygienic conditions. Mortality averaged 6.5% (Big Dutchman Aviplus), 5.5% (Victorsson), 5.4% (Hellmann) and 4.9% (Triotec). If some outbreaks of non-system and virus related diseases in Sweden at this time (Marek and leucosis) are not included, the mortality was considerably lower in many cases. Some coccidiosis at early age appeared in the Aviplus due to poor hygiene of the cage following non optimal location of perch arrangements which was altered later in the tests.

The average mortality was found moderate and acceptable and similar to results in Sweden with conventional cages at 600 cm<sup>2</sup>/hen. For example, mortalities were in line with the Danish efficiency control data of conventional cages for layers (beak trimmed) at 600cm<sup>2</sup>/hen in the middle of this period of time (5.4-5.9%). The use of facilities like the nest at egg laying (normally >90-95%) and perch (normally 70-90% during night time) well illustrated the improvement as regards the possibility for increased behavioural repertoire compared to a conventional cage. The use of the litter varied between hybrids and location of the litter area and was more frequent at litter locations closer to the cage floor than on top of the nest. Exterior egg quality was not focused at in this evaluation but long term research at the Swedish University of Agricultural Sciences shows variation between models but competitive results as in conventional cages in the best furnished cage models on traits like proportion of cracked and dirty eggs.

It is concluded that although this system, like all new systems, of course would benefit by further refinements – some of which have already been carried out by some manufacturers – it was found fully possible to reach normal production and mortality figures similar to those in conventional cages at commercial units in Sweden over the period. The further use of furnished cages depends on a lot of factors and also how other alternatives develop including floor systems. Hence, the spread and success of the furnished cages is linked to e.g. spreading of know how between manufacturers, management guidelines for new producers, the success of other systems, national animal welfare and veterinary directives (e.g. on the use of medications without withdrawal times of eggs in floor kept hens at de-worming programs), the possibility to beak trim especially floor hens, genetic selection against cannibalism and feather pecking, markets for eggs of different origin, cost of production, air condition and occupational safety, etc. It should be noted that a considerable increase of group size with non beak trimmed birds in furnished cages may imply a potential risk as regards cannibalism especially in brown genotypes.

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