

Health and welfare in organic poultry in Europe: state of the art and future challenges

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Abstract – In Europe, over 4 million laying hens and 1.8 million broilers are kept according to the organic principles. Although the regulations are the same for every country, there is a large diversity in farm sizes and farming systems. In Switzerland, 220.000 laying hens are kept on 2100 farms, while in the Netherlands 700.000 hens are kept on 130 farms. In Switzerland, mean mortality is 8%, in the Netherlands mean mortality is 11%, mainly caused by infectious diseases. Regarding animal welfare, feather pecking is seen in 70% of the Dutch and in 50% of the Swiss flocks. Feather pecking has usually started during the rearing period. The main challenges for the future are reducing the vulnerability to diseases and decreasing the amount of feather pecking. In this respect, appropriate rearing conditions are of crucial importance. Moreover, the consequences of large farm size and the layout of the outdoor run should receive more attention. These goals can be achieved by research, education of farmers and regulation.¹

DIVERSITY OF POULTRY SYSTEMS

In Europe, over 4 million organic laying hens are kept (mainly in the UK, France, Germany and the Netherlands), as well as 1.8 million organic broilers (mainly in France and the UK; Eurostat, 2004). Although EU-regulations exist for keeping organic poultry, the diversity in production systems in the different countries is large. Table 1 illustrates this diversification by comparing the situation in the Netherlands and Switzerland (the origin of the authors of this paper). One of the most striking differences between the two countries is the farm size. In the Netherlands, farms exist with up to 25.000 organic hens.

Table 1. Characteristics of the organic poultry sector in the Netherlands and Switzerland.

| Characteristic | The Netherlands | Switzerland |
|-------------------------------|-------------------------|---------------------------|
| No. of hens | 700.000 | 220.000 |
| No. of farms ^a | 100 | 160 |
| Mean farm size ^a | 7.000 | 1.200 |
| Maximum group size | 3.000 | 500 |
| Organic ^b rearing? | Yes | Yes |
| General farm type | Mainly specialised | Mixed |
| Sales | 75% exported to Germany | 100% domestic consumption |

^{a)} Farms which produce for marketing organisations (keeping over a approximately 200 hens).

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^{b)} Although there is no EU-regulation concerning organic rearing, there are some rules on the national level.

ANIMAL HEALTH

In the Netherlands, the mean mortality in organic laying hens is 11% (0-21%), caused by infectious diseases such as *E. coli*, Infectious Bronchitis, Coccidiosis and *Brachyspira* (Fiks *et al.*, 2002). This vulnerability to infectious diseases may be caused by a high infection pressure (in the Netherlands, 25 million of layers are being kept, mainly in 2 areas) and perhaps not enough general disease resistance. In Switzerland, mean mortality in organic layer flocks is 8% (3-25%; Bio Suisse, 2006). The hybrids used in organic are mainly the same as in conventional poultry husbandry. Vaccinations e.g. against Marek's disease, infectious bursal disease (IBD, Gumboro), infectious bronchitis (IB), avian encephalomyelitis (AE), *Coccidia* and additionally in the Netherlands Newcastle Disease (NCD), *Salmonella*, Laryngotracheitis, Fowl Pox and Egg Drop Syndrome (EDS) may prevent a lot of trouble, but it is not clear whether they have side effects.

Hens on organic farms seem to have more parasite problems than animals kept under conventional conditions (Maurer *et al.*, 2002). Parasitic helminths on organic farms are usually controlled with conventional treatments; as a consequence, residuals can occur in eggs. Non-chemical control of the blood-sucking chicken mite *Dermanyssus gallinae* is at a more advanced stage (Maurer and Perler, 2006).

FOOD SAFETY

Infections such as *Salmonella* do not affect animal health, but when included in eggs, they present a risk for certain consumer groups. Therefore, farmers keep the risk to a minimum. In the Netherlands this is done mainly by vaccinating animals, which is forbidden in Switzerland. However, Hauser and Fölsch (2002) found no differences in the microbial quality of eggs from 4 different farming systems.

In several European countries, higher dioxin levels have been reported in eggs of free-range chickens, compared to chickens kept indoors (Kijlstra, 2004). High levels are found mostly in smaller farms, probably because there the chickens make use of the outdoor run more intensively.

A smaller risk, but disastrous when appearing, is the infection with Avian Influenza. This risk is kept to a minimum by monitoring poultry flocks and wild birds as well as keeping chickens indoors temporarily, which is a risk for their well-being.

ANIMAL WELFARE

A good measure for animal welfare in organic laying hens is the degree of feather pecking, as feather pecking is associated with stress (El Lethey *et al.*, 2000). In the Netherlands feather pecking is seen in 70% of the laying flocks (Bestman and Wagenaar, 2003) and in 54% of the rearing flocks (Bestman and Wagenaar, 2006). In laying farms feather pecking is mainly correlated with reduced use of the outdoor run (Bestman and Wagenaar, 2003). In rearing farms feather pecking is correlated with high densities of chicks, combined with poor environments, especially the first weeks, when they are confined on grid floors without litter and perches (Bestman and Wagenaar, 2006; Gunnarsson *et al.*, 1999). Once started during rearing, feather pecking has proved to be very persistent throughout the whole chicken life. As mentioned, the use of the hen run reduces feather pecking. However, on many poultry farms, the runs are not used well, which indicates that the animals do not feel safe in it. The outdoor run could be made more attractive by offering different kinds of shelter (Zeltner and Hirt, 2003) and perhaps limiting the group size, since insufficient use is seen more in groups larger than 500 (Hirt *et al.*, 2000). Based on these findings in both rearing and laying hens, we conclude that the current situation in poultry welfare is far from ideal and can even be called alarming.

ENVIRONMENT

Several studies show that without additional efforts the mineral loss from the outdoor run to the environment (nitrogen and phosphorus from manure to ground water) will lead to pollution (Aarnink *et al.*, 2005). On account of the uneven distribution of the hens in the free range area, Menzi *et al.* (1997) found a nutrient and heavy metal overload, especially on the most frequent used parts of the run. This has not received enough attention, but more awareness and experimenting with different measures will be necessary.

BROILERS

In the Netherlands and in Switzerland organic broilers are of less importance than laying hens. In the Netherlands in 2004 16 farms produced totally 190.000 organic broilers (mean 12.000 per farm), and in Switzerland 66.000 broilers were fattened on 77 farms (mean 900 per farm). The main health problems of these growing animals differ from the problems in laying hens. Diseases with a long prepatent or incubation period (e.g. ascarids) do usually not break out, not even in the relatively long living organic broilers. Prevention of typical diseases of young animals, e.g. diarrhoea, is crucial. Organic broilers live long enough to exhibit specific or, more frequently, unspecific clinical symptoms of Marek's disease, against which they should be vaccinated. Vaccination (Paracox) is also recommended and on organic farms usually applied against coccidiosis, which otherwise is the main health problem (Früh *et al.* 2003).

The use of slow growing hybrids has reduced skeletal lesions in organic broilers. If hybrids with a fattening period of more than two months are used on organic farms, animals usually remain mobile during the whole fattening period. Predators (hawk, fox, martens) are a cause of broiler losses in free-range systems.

A food safety issue in broilers is the occurrence of *Salmonella* spp. and *Campylobacter* spp. infections. In the Netherlands, a study on 31 organic farms revealed a prevalence of 13% for *Salmonella* and 35% for *Campylobacter*; the incidence of *Salmonella* is lower and that of *Campylobacter* is higher in organic than in conventional broiler flocks (Rodenburg *et al.*, 2004). The risk of spreading these zoonoses can be reduced by applying basic hygiene measures.

CHALLENGES FOR THE FUTURE

Although problems with animal health and welfare can be seen on many farms, there are also farms performing well. This means that the system as such is not the problem. In this section we summarise the future challenges for the European organic poultry sector.

The following *research* topics seem of primary importance:

- Prevention of feather pecking, especially in rearing hens.
- Improvement of outdoor runs (more attractive to the animals and decrease of mineral loss).
- Decrease of vulnerability to diseases.
- Practical solutions for chicken mite control.
- Alternative strategies for helminth control.
- Composition of 100% organic feeds according to the needs of high performing layers.
- Prevention of coccidiosis, *Salmonella* and *Campylobacter* in broilers.

Education of and awareness in farmers should focus on:

- Prevention of feather pecking in rearing hens.
- More awareness of the wholeness of a chickens' life (instead of only rearing or only production).
- Awareness of how to make the outdoor run more attractive and environmental friendly.
- Awareness of (preventive) animal health care.

The following points should be solved on a *political level*:

- EU-regulation concerning rearing factors.
- Consensus about reducing the risk of influenza (e.g. vaccination).

Moreover, the (limitation of) the farm size as a measure to solve some of the problems mentioned in this paper, should be evaluated.

REFERENCES

A list of references is available from the authors.