



## Question to EURCAW-Poultry-SFA

Reference of the query: Q2E-Poultry-SFA-2023-009

Query received: 06/09/2023

Date of admissibility: 19/09/2023

Replied sent 18/01/2024

**Type of production:** Broiler breeders

**Level:** Husbandry

**Key words:** Management

### Background context provided by the solicitor

The usage of water restriction is common practice in broiler breeders. We would like to know what the potential consequences would be regarding animal welfare to give broiler breeders *ad libitum* access to water instead of restricting them for water. Actually, animals are feed restricted (exact programme unavailable) and water restricted (3 distribution of water during daytime, water amount/bird unavailable). The water troughs are paced over slatted floor. Our animal welfare inspectors have the serious impression that the animals are thirsty during inspections when the animals are having restricted access to their water supply.

### Question

We would like to know what the potential consequences would be regarding animal welfare to give broiler breeders *ad libitum* access to water instead of the restricted access to water.

### Answer

#### Introduction

Broiler breeders have a pronounced appetite and consequently a high growth potential (Denbow, 1989, Siegel and Wolford, 2003), for which reason *ad libitum* access to feed results in obesity which can be detrimental to both health and fertility (Heck et al., 2004, Renema and Robinson, 2004). Common practice is therefore to apply quantitative feed restriction, i.e., to provide a restricted amount of standard feed containing the exact energy content needed for the birds to follow a predetermined growth curve. In the EU, the most commonly used feeding programme is feeding once a day. The level of feed restriction varies depending on (i) the growth potential, with the breeders producing the fast-growing broilers being exposed to the highest level of feed restriction and (ii) the age of the birds, with feed restriction being most severe during the rearing period compared to the production period (reviewed in Riber, 2020).

Consequently, the birds experience hunger and some associated welfare consequences, such as physiological signs of stress and the expression of abnormal behaviour in the form of increased general

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activity (in particular locomotion), stereotypic pecking, increased levels of aggression and cannibalism (Riber, 2020). Stereotypic pecking may be directed towards any object in the environment, including the water nipples, which can result in water spillage (Puterflam et al., 2006, Nielsen et al., 2011). Furthermore, in an attempt to reduce hunger, the breeders may develop polydipsia, i.e., overdrinking (Hocking, 1993).

### The practice of water restriction

To avoid polydipsia and water spillage when applying feed restriction in broiler breeders, a common practice is to also restrict access to water. However, knowledge on the exact prevalence at which water restriction is applied in the EU is limited (EFSA AHAW Panel et al., 2023). Usually, water is provided during part of the day, e.g., a few times per day for a limited period and always during the period of feeding. Feed restriction is applied from 7–10 days of age and may continue until the end of life for the genotypes of broiler breeders with high growth potential. This means that if water is restricted, the restriction may be applied for almost their entire life.

### Welfare consequences of water restriction

Water restriction is kept at a level that allows for the consumption of at least the minimum amount of water necessary for sustaining life, growth and production. However, although the performance objectives are met, the water restriction still poses welfare challenges to broiler breeders such as causing thirst. Thirst has been defined as a negative motivational state which may arise to drive water seeking behavior (Mellor, 2017) if access to water is limited or restricted (Jensen and Vestergaard, 2021). Freedom from thirst is one of the 'Five Freedoms', an evidence-based framework to capture the key aspects of animal welfare developed by FAWC in the late 1970's, implying that thirst is considered highly detrimental to animal welfare. Neither the level of thirst nor the motivation to drink have been quantified in broiler breeders subjected to different extents of water restriction, except one study demonstrating that water restricted broiler breeders show behaviour indicative of a high motivation to drink (Ross et al., 1981).

### Welfare consequences of ad libitum access water

On the other hand, *ad libitum* access to water may cause welfare problems, if preventive measures are not applied. Broiler breeders showing polydipsia have an increased water intake, which results in watery droppings (Savory and Mann, 1997). In addition, stereotypic pecking at the water nipples (without consumption of the water) may cause water spillage. If the moist droppings and water spillage get in contact with the litter, the result is wet or damp litter and multiple welfare issues may arise. Damp litter increases the risk of contact dermatitis, i.e., footpad dermatitis, hock burns and breast burns (Ekstrand et al., 1997, Bessei, 2006). It also increases the risk of soiled plumage (Tahamtani et al., 2020), which may be experienced as uncomfortable by the bird and pose a risk of cold stress as the plumage loses its insulating capacity. Resting may be compromised due to the uncomfortable conditions that damp litter creates. This is particularly a problem during the rearing period, where perches or other elevated structures are often not provided. High moisture will result in poor quality litter, which is suboptimal for important basic behaviours such as foraging, exploration and dustbathing (Riber and Tahamtani, 2020, Riber et al., 2021).

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## Solutions

Limiting access to water to only certain periods of the day should be avoided due to the negative welfare implications of this practice. Instead, the risk of poor litter quality should be reduced by implementing preventive and mitigative measures. Several measures may be applied, including the choice of genotype, feeding strategy, equipment for water distribution, design of the area around the water sources and ventilation program. These measures are described below.

Water restriction is only applied in connection with feed restriction. Choosing genotypes that can tolerate *ad libitum* access to feed implies that water restriction can be omitted. Such genotypes of broiler breeders are those with lower growth potential (EFSA AHAW Panel et al., 2023). Unfortunately, limited information is available on the specific level of feed restriction applied for the different genotypes currently on the market, but in general it can be expected that the lower the growth potential, the more likely it is that the breeder can tolerate *ad libitum* access to feed (Arrazola and Torrey, 2021).

For birds that are exposed to feed restriction, a preventive measure is to reduce the sensation of hunger, as this will in turn lower the risk of developing polydipsia and stereotypic pecking. One way to reduce the sensation of hunger is to offer more fibre-rich diets as this allows for a bulkier meal at the same energy level. Studies have shown that fibre-rich diets result in improvement of some welfare indicators, although results vary between studies (e.g. Arrazola et al., 2019, Arrazola et al., 2020a, Arrazola et al., 2020b, Tahamtani et al., 2020, Tahamtani and Riber, 2020, Riber and Tahamtani, 2020, Riber et al., 2021, van Emous et al., 2021). Importantly, the diet should be diluted with insoluble fibres as opposed to soluble fibres, as the latter results in high water consumption, watery droppings, poor litter quality and, depending on the concentration, intestinal discomfort (Nielsen et al., 2011, Riber et al., 2021, Riber and Tahamtani, 2020). Another method to alleviate hunger is to change the growth trajectory such that severe restriction is relaxed during periods of rearing. This has been shown to be doable without negative effects on fertility or obesity-related welfare issues, while still having some measurable benefits on welfare indicators (Afrouziyeh et al., 2021, de los Mozos et al., 2017, Dixon et al., 2014).

Some measures can be applied, preferably in combination, to mitigate welfare issues linked to polydipsia and water spillage. Slats underneath the drinkers allow draining of water spillage and therefore reduce the risk of wet litter. Another measure is the use of water nipples specifically designed for broiler breeders in a way such that the flow of water from the nipples is slow, meaning that only small amounts of water are released every time the trigger pin is activated, reducing the risk of water spillage. If polydipsia occurs, resulting in watery droppings, high ventilation efficiency and good quality litter will reduce the risk of wet litter.

## Conclusions

For animal welfare reasons, restriction of water for consumption should never be practised in any husbandry system. On the other hand, *ad libitum* access to water for broiler breeders may compromise welfare aspects related to poor litter quality due to a risk of polydipsia and water spillage, if preventive and mitigative measures are not applied. However, solutions are available that either prevent, reduce or mitigate the polydipsia and water spillage that leads to the welfare challenges. *Ad libitum* access to

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water should therefore be provided, but always in combination with one or several of the above-mentioned measure to avoid a negative impact on litter quality.

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