Question to EURCAW-Poultry-SFA

Reference of the query: Q2E-Poultry-SFA-2021-001
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Background context provided by the solicitor

Poultry productions (*Gallus gallus*, laying hens). AWI in outdoor access of laying hens.

Question

In the context of poultry productions (Gallus gallus, laying hens) with access to the open air or outdoor range, we would like to know:

a. The welfare indicators that can be used to assess when pullets are ready to have access to outdoor range,
b. If possible, based on these indicators, the range of age pullets are ready to have access to outdoor with no major consequences on their welfare.
c. The main characteristics of an outdoor range that will optimize frequentation by the pullets, once given access to outdoor.

Key words: Behaviour, handling, health and body condition, housing system, management
Level: husbandry
Type of production: Laying Hen, Pullet

Answer

a. Welfare indicators that can be used to assess when pullets are ready to access the outdoor area.

The most relevant indicator to assess when pullets are ready to access the outdoor area is **plumage coverage**, (i.e. feather cover and feather condition). Plumage coverage is vital for thermoregulation (Cangar *et al.,* 2008), protection from sunburn and from the rain. Thus, it is important for pullets to have a fully developed plumage before birds are exposed to the outdoor climatic conditions.

There are two main types of feathers: contour feathers, which comprise the flight feathers and those that cover the body, and the embryonic down feathers (or plumules). Down feathers are essential to conserve body temperature, especially during the first days of life; their structure helps to trap the warm air for thermal insulation (Lingham-Soliar, 2019). During rearing a series of moults occur until eventually a definitive adult plumage replaces all juvenile feathers.

Good plumage coverage requires full grown adult feathers, without bald areas. Photo 1 is an example of pullets with good plumage condition and coverage.

Photo 1: Pullets with good plumage coverage and feather condition, 12-week-old (Source: Estevez *et al*., 2019).

Other indicators that can help deciding whether is convenient to provide access to the outdoor range are:

- **Mortality index:** sudden rises in mortality will indicate that there is some health problem in the flock. This indicator can be used as a general approach to the health status of the animals. If so, the farm's veterinarian should analyse if the flock has any disease to be managed and whether it is compatible or not with an outdoor access.
- **Other diseases or health problems detected:** if any disease is detected in the rearing flock, it should be managed, and the farm's veterinarian should analyse if it is compatible or not with outdoor access.
- **Weight:** body weight could be an indicator of good (normal) growth of the flock, but it depends on the genetics used so it is not possible to give a recommended threshold.

b. Range of age from which pullets are ready to access the outdoor area under normal conditions.

Fully feathered pullets should be ready to access the outdoor areas around **8-10 weeks of age**, depending on the genetics, management, and nutrition of the flock, and as long as they are in good health. Some experimental studies have shown adequacy of access from 8 weeks of age (Estevez *et al.,* 2019, photo 2), although can be from as early as 6 weeks, and it is strongly recommended that pullets gain access no later than 12 weeks of age (CIWF, 2016; Eurogroup for animals, 2018).

Photo 2: 8-week-old pullets in the outdoor range under experimental conditions (Source: Estevez *et al.,* 2019).

Although there are limited studies on the use of outdoor areas by pullets (e.g. Gilani *et al.,* 2014), it is known that initial outdoor exposure in laying hens determines their use through their productive life (Rodriguez-Aurrekoetxea and Estevez, 2016). Therefore, it is expected that early outdoor access during rearing will have strong and lasting effects over the use of the outdoor areas when adults. Familiarity with outdoor areas will make young laying hens less fearful when first accessing the outdoors in the production house increasing their likelihood of ranging as adults. In addition, giving outdoor access during rearing has been shown to have a protective effect against injurious pecking (Featherwel, 2013). As a management practice it is recommended to gently encourage the pullets outside the first days of outdoor access. This will facilitate the birds to explore and get familiar with the outdoor environment at the start and will stimulate the outdoor use later on.

Weather conditions are also an important aspect to consider when providing access to the outdoor area to pullets and laying hens. Access should be decided upon considering the weather conditions. Down feathers become ineffective in their function (insulation and thermoregulation) when wet or damp, so in bad weather the outdoor access could be delayed. On the contrary, under good weather conditions an early outdoor access will be appropriate.

c. *Main characteristics of the outdoor range to optimize frequentation by the pullets, once given access to outdoor.*

It is important to provide some form of cover in the outdoor area to maximize their use**.** A good cover can be achieved with vegetation (e.g. bushes, trees, deep grass, maize, etc.) that also provide added benefits to the farm environment, or by provision of artificial shelters (e.g. tents, roofs, elevated camouflage nets, etc.). The cover should start near to the house to encourage access to the range (Featherwel, 2013; Temple *et al*., 2017). It is useful to reduce predator risk perception (protection from aerial threats and terrestrial predators),

and to provide protection towards adverse climatologic conditions (such as wind or rain). Shade areas will encourage the birds out to the range on sunny days, and shelters also keep the dust baths dry for the expression of dust bathing behaviour (Featherwel, 2013; Temple *et al*., 2017).

Increasing the amount and vegetation diversity will promote range use, as it will offer environmental variation to the birds and increase the number of insects and material for hens to forage upon. Greater and further ranging is associated with the presence of trees and hedges (Temple *et al*., 2017; Newberry, 2017) and artificial cover (Gilani *et al.,* 2014). As hens are domesticated from the "jungle fowl", their behaviour is adapted to use tree and bush like structures for safety from predators (Newberry, 2017). Using of tree-cover also helps a more even distribution of birds across the outdoor area, which may reduce the risk of parasitic contamination and nitrogen and phosphate accumulation (Bestman *et al*., 2018).

Besides of keeping the outdoor area attractive to the birds, the range should be free of disease risks (dirty water, garbage, soil pollution, vectors of diseases). Wet, muddy ranges with no visible shelter will result in poor range use by pullets and laying hens and are a disease risk. In this regard, concern exists about the risk of avian influenza due to increase contact with wild bird populations (directly or by faeces) in the range. In their pilot study, Bestman *et al*. (2018) observed more high-risk birds (migratory water birds which are traditional vectors for avian influenza) in free-range areas with less than 5% of woody cover, as compared to areas with more wood cover; and more high-risk birds were also observed in the surroundings of free-range areas in open landscapes, compared to half open landscapes.

On the other hand, it is important to **provide material** to increase behavioural opportunities such as foraging material, grass or dust bathing substrates. Forage sources, including hay bales, were observed to be most effective in attracting hens to use the range followed by shelter belts and artificial shade (Newberry, 2017).

In adult laying hens it is also recommended to provide **easily accessible popholes**, wide and large enough to prevent hens blocking the pass of other birds (Featherwel, 2013; Gilani *et al*., 2014; Temple *et al*., 2017). The same rationale could be applied in pullets. The view from the pophole should be attractive (i.e. birds can see the range, shelter, forage, dust bathing areas or other hens), and minimize light contrast (for example, using an small roof above the pophole to block direct sunlight or increasing light intensity inside the house). Areas around popholes can be difficult to manage in bad weather, creating puddles and muddy areas that discourage hens from ranging, increase biosecurity hazards and lead to wet and dirty litter inside the house. The use of wood chips or gravel around the poultry house facilitates drainage to avoid this problem (Newberry, 2017). It should also be checked that all gutters lead away from the house. Providing a veranda or winter garden would also be a good option, providing a halfway house to the range.

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